



State of Arizona

2007 Railroad Inventory and Assessment

A Final Report To
Arizona Department of Transportation



Submitted By

R.L. Banks & Associates, Inc.

Engineering • Economics • Service Planning
Tiburon, CA and Washington, DC

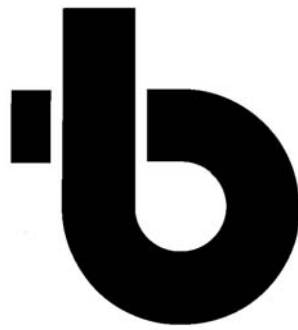


In Association With

Lima & Associates
Phoenix, AZ.

Systra Consulting, Inc.
Los Angeles, CA.

March 2007



WASHINGTON, DC

**1717 K Street, N.W.
Washington, DC 20036-5331
T 202.296.6700
F 202.296.3700
transport@rlbadc.com**

CALIFORNIA

**6 Beach Road, #250
Tiburon, DC 94920-0250
T 415.789.5061
F 415.789.5019
rlbasf@aol.com**

State of Arizona

Railroad Inventory and Assessment 2007

Acknowledgements

In the preparation of this report, R.L. Banks & Associates, Inc., (RLBA) gratefully acknowledges assistance from many sources. In particular, assistance from officials of Arizona state and local government, and from the railroads of Arizona, has been especially important in developing this inventory and assessment. Following is a list of those who provided assistance.

David Agee, BNSF Railway/Arizona Operation Lifesaver
 Eric Anderson, Maricopa Association of Governments
 Dave Barber, Western Arizona Council of Governments
 Edward Barge, San Pedro & Southwestern Railroad
 Bart Barton, Arizona Railway Museum
 Chris Becker, CBA Inc.
 Bobby Blake, Copper Basin Railway
 Stuart Boggs, Valley Metro/Regional Public Transportation Authority
 Rob Bohannon, Arizona Rail Passenger Association
 Robin Breen, Arizona Central Railroad/Verde Canyon Railroad
 Arnold Burnham, Arizona Department of Transportation-TPD
 Dale Buskirk, Arizona Department of Transportation-TPD
 Les Byrum, Mayor of Kingman
 Tom Callow, City of Phoenix
 Matt Carpenter, Arizona Department of Transportation-PTD
 Paul Casertano, Pima Association of Governments
 Nick Castro, Arizona & California Railroad
 Mark Catchpole, Arizona Department of Transportation-TPD
 Gene Caywood, Old Pueblo Trolley/Southern Arizona Transportation Museum
 Tanya Cecil, Arizona & California Railroad
 David Chambers, Grand Canyon Railway
 Jim Chessum, Greater Yuma Port Authority
 Eileen Colleran, Arizona Department of Transportation-Legislative Services
 Kevin Collins, HDR, Inc.
 Tim Cowan, Camp Navajo
 Janna Day, Fennemore Craig
 Carlos deLeon, City of Tempe
 Michael Delleo, Arizona Department of Transportation-ITD
 LaDonna DiCamillo, BNSF Railway
 Jim Dickey, Arizona Department of Transportation-PTD
 Dale Diulus, Salt River Materials Group
 John Doull, Arizona Central Railroad/Verde Canyon Railroad
 John Dugan, Arizona Railroad Group
 Nicole Dykert, Arizona Department of Transportation-TPD
 Ed Ellis, Iowa Pacific Holdings/Permian Basin Railways
 Larry Engleman, METRO light rail

Acknowledgements (continued)

Doug Farler, Union Pacific Railroad/Arizona Operation Lifesaver
 Chris Fetzer, Northern Arizona Council of Governments
 Jason Fata, Port of Tucson
 LaTonya Finch, BNSF Railway
 Tom Fisher, Pima Association of Governments
 Kent Fletcher, San Manuel Arizona Railroad Company-BHP Billiton
 Scott Friedson, Arizona Department of Transportation-PTD
 Ray "Skeeter" Frist, Copper Basin Railway
 Augie Garcia, Tucson-Mexico Trade Office
 Jami Rae Garrison, Arizona Department of Transportation-TPD
 Mike Garey, National Association of Railroad Passengers
 Bob Gasser, Arizona Department of Transportation-ITD
 Dennis Giacoletti, Arizona Eastern Railway
 Jim Glock, Director, Tucson Transportation Department
 Don Gorman, Arizona Department of Transportation-ITD
 1st Lt. Paul Golosewski, Camp Navajo
 Ed Green, Arizona Department of Transportation-ITD
 Charles "Charlie" Hagood, USDOT-Federal Railroad Administration
 Kathy Hall, Camp Navajo
 Anthony "Tony" Haswell, Arizona Rail Passenger Association
 Jay Harper, METRO light rail
 Bob Hazlett, Maricopa Association of Governments
 John Heffner, Counsel for Iowa Pacific Holdings / Arizona Railroad Group
 Michael Hegarty, Governor's Office of Community and Highway Safety
 Patricia Hicks, US Bureau of Reclamation
 Carlton Hill, Camp Navajo
 Mark R. Hoffman, Arizona Department of Transportation-PTD
 Sintra Hoffman, City of Surprise
 Kirby Hunter, Arizona Eastern Railway
 L.S. "Jake" Jacobson, Copper Basin Railway
 Susan Kanzler, Arizona Department of Transportation-TPD
 Karen King, USDOT-Federal Highway Administration
 David Kirk, Tucson Electric Power-Springerville
 Jack Kramer, City of Kingman
 Dianne Kresich, Arizona Department of Transportation-TPD
 Robert LaCivita, Grand Canyon Railway
 Sam Lanter, Grand Canyon Railway
 Brian Lehman, Arizona Corporation Commission
 Alan Levin, Port of Tucson
 Matt Levin, Port of Tucson
 Bill Leister, Central Arizona Association of Governments
 Ron Lewallen, San Manuel Arizona Railroad Company-BHP Billiton
 Gail Lewis, Arizona Department of Transportation
 Maurice Light, City of Tempe
 Bill Lindley, Arizona Rail Passenger Association
 Bob Lindsey, Phelps Dodge-Sierrita
 Ron Lindsay, Arizona Central Railroad/Verde Canyon Railroad
 Ron Loar, Arizona Department of Transportation-CCP

Acknowledgements (continued)

Pat Loftus, TTX Corporation
 Tony Love, Union Pacific Railroad
 Mack Luckie, Yuma Metropolitan Planning Organization
 Dan Luedke, Camp Navajo Industrial Operations
 Joe Marie, METRO light rail
 Dave Martin, Department of Homeland Security-TSA
 Megan McIntyre, BNSF Railway
 Jyme Sue McLaren, City of Tempe
 Victor Mendez, Director, Arizona Department of Transportation
 DJ Mitchell, BNSF Railway
 Scott Moore, Union Pacific Railroad
 Cheryl Mott, Camp Navajo
 Tom Mulligan, Union Pacific Railroad
 Nate Murray, BNSF Railway
 Jack Mustin, Copper Basin Railway
 RC Noderer, City of Tempe
 Cathy Norris, BNSF Railway
 Frank Nides, Phelps Dodge-Ajo
 Shandra Olsson, Arizona Department of Transportation-PTD
 Dennis Osborn, Resolution Copper Company/Rio Tinto-Superior
 Randy Overmyer, City of Surprise
 Ed Pajor, Phelps Dodge
 Scott L. Parkinson, Arizona Rail Group
 Marc Pearsall, Arizona Department of Transportation-PTD
 Tom Petersen, CIT Rail
 Aline Pannell, Copper Basin Railway
 Rudy Perez, Arizona Department of Transportation-TPD
 Joe Peralta, Arizona Corporation Commission
 Chris Peterson, Union Pacific Railroad
 Kathryn Pett, Snell & Wilmer
 Ashek Rana, Arizona Department of Transportation-ITD
 Al Richmond, Arizona State Railroad Museum Foundation
 Shannon Scutari, Office of the Governor of Arizona
 John Shaw, ASARCO-Hayden
 Rick Simonetta, METRO light rail
 Matt Sipe, Salt River Project-Coronado
 Dennis Smith, Maricopa Association of Governments
 Kevin Smith, Arizona & California Railroad
 Jim Smith, Union Pacific Railroad
 Jay Smyth, Southwest Rail Corridor Coalition
 Doug Stacy, Phelps Dodge-Morenci
 Keith Stockwell, BNSF Railway/Arizona Operation Lifesaver
 John Swanson, METRO light rail
 John Syers, Arizona Department of Transportation-ITD
 Robert L. Teel, The Apache Railway Company
 Paul Thomas, BNSF Railway
 Lt. Col. Peter Toci, Camp Navajo

Acknowledgements (continued)

Richard Travis, Deputy Director, Arizona Department of Transportation
Bruce Vana, Arizona Department of Transportation-ITD
Skip Vaughn, Tucson Electric Power-Springerville
Kevin Wallace, Maricopa Association of Governments
Oliser "Junior" Ward, Arizona Public Service-Cholla
Sgt. Jon Waide, Arizona Operation Lifesaver
Marisa Walker, CANAMEX Corridor Coalition
Chris Watson, Arizona Corporation Commission
George L. Watson, Black Mesa & Lake Powell Railroad-SRP
Henry Weller, Permian Basin Railways/Iowa Pacific Holdings
David Wessel, Flagstaff Metropolitan Planning Organization
Tom Whitmer, Arizona Corporation Commission
Jerry Wilmoth, Union Pacific Railroad
Jeff Wier, City of Kingman
Frank Wilson, Department of Homeland Security-TSA
William Wiseman, Department of Homeland Security-TSA
Rip Wilson, SRW Consulting
Glenn Wood, AZ Dept. of Emergency and Military Affairs-Camp Navajo
Ernie Workman, Phoenix Trolley Museum/Arizona Street Railway Museum
Yuma Valley Chapter NRHS/Yuma County Live Steamers Association
Robert Yabes, City of Tempe
Rich Zarr, McElhaney Cattle Company
James "Jim" Zumpf, Arizona Department of Transportation-TPD

Special thanks to Sgt. Jon Waide for permission to use his cover photograph.

State of Arizona Railroad Inventory and Assessment – 2007

Table of Contents

	<u>Page</u>
Acknowledgements.....	i.
Table Of Contents.....	v.
Introduction.....	vi.
Chapter 1: State of Arizona Railroad Network	1
Chapter 2: GIS Map Database.....	76
Chapter 3: Grade Crossing Improvements.....	79
Chapter 4: Passenger Rail Services.....	81
Chapter 5: Class I Railroad Needs and Plans.....	96
Chapter 6: Needs of Arizona's Small Railroads.....	99
Chapter 7: Federal Funding.....	102
Chapter 8: Railroad Preservation Opportunities.....	107
Chapter 9: Right of Way Preservation Strategies.....	112
Chapter 10: Current Conditions of Influence.....	116
Chapter 11: Contacts And Resources.....	122
 Maps	
2007 Arizona Railroads Map.....	7
2007 Arizona Railroads Map (Service Status and Ownership).....	8
2007 Arizona Railroads FRA Track Class Map.....	9
2007 Arizona Railroads Train Service Type Map.....	10
Phoenix Area-Central Arizona Region Railroad Map.....	14
Tucson Area-Southeastern Arizona Region Railroad Map.....	15
Central-Eastern (Copper Country) Arizona Region Railroad Map.....	16
Yuma Area-Southwestern Arizona Region Railroad Map.....	17
Northern Arizona Region Railroad Map.....	18
Northeastern Arizona Region Railroad Map.....	19
 Figures	
Figure 1 - Freight Railroad Traffic in Arizona: Tons Originated 2005.....	11
Figure 2 - Freight Railroad Traffic in Arizona: Tons Terminated 2005.....	12
Figure 3 - Freight Railroad Traffic in Arizona: Tons Originated and Terminated..	13
Figure 4 - Abandoned Railroads of Arizona (1950-2007).....	73

Arizona Department of Transportation – Public Transportation Division
 State of Arizona Railroad Inventory and Assessment – 2007
 Web Site - www.azdot.gov/PTD/RailroadStudies.asp

State of Arizona Railroad Inventory and Assessment – 2007

Introduction

This 2007 Arizona Railroad Inventory and Assessment was prepared by R.L. Banks & Associates, Inc. (RLBA) and sub-consultants Lima and Associates (Lima) and Systra Consulting, Inc., (Systra) in response to the Arizona Department of Transportation (ADOT) Scope of Services prepared by the ADOT Public Transportation Division.

The Arizona Department of Transportation has been involved with railroad planning since 1976, with its first State Rail Plan Update issued in 1978. The most recent report, the 2000 Arizona State Rail Plan Update was an important starting point for this Inventory and Assessment in that the seven-year-old study provides the description and inventory of Arizona railroads as they existed at that time. There have been a number of important changes over the intervening years, and these are reflected in this 2007 Inventory and Assessment. In addition to the 2000 State Rail Plan Update, RLBA made use of the 2003 Maricopa Association of Governments (MAG) High-Capacity Transit Study and the 1998 Arizona High Speed Rail Feasibility Study.

The information contained in this report was gathered from a number of sources, including the railroads themselves, ADOT, the Arizona Corporation Commission, MAG and numerous Arizona officials. A listing of persons who contributed to this Railroad Inventory and Assessment is provided under “Acknowledgements” inside the front cover. Information in this report also was obtained from the Association of American Railroads and from RLBA’s extensive data banks.

Chapter 1

State of Arizona Railroad Network

Purpose

This chapter provides an overview of the current existing rail network in Arizona. It includes a detailed inventory, service levels, track condition, operations and current operating statistics, ownership, intrastate and interstate rail connections, safety information, and current and planned status of rail facilities, programs and projects, regarding freight and passenger rail services.

Federal and State Oversight/Control

Significant federal regulation of railroads began with the Interstate Commerce Act of 1887, creating the Interstate Commerce Commission (ICC), which administered the federal regulatory program. The scope of federal regulation was significantly expanded subsequent to 1887, to include, in addition to car supply and rates, line construction, mergers and line abandonments. Increasing regulation, which precluded market-responsive adjustments (e.g., rates, abandonments), and growth of air and motor transportation, brought the railroad industry to the brink of bankruptcy by the 1970s, when Congress began enacting reform legislation. This culminated in the Staggers Rail Act of 1980, which made it federal policy to rely on competition and demand, in other words, the marketplace, to establish rail transport rates. The Act also expedited abandonment procedures and accelerated merger timetables. It is generally accepted that Staggers Act deregulation of railroads allowed them to regain financial solvency. Federal economic regulatory oversight pre-empts state and local regulation of railroads.

Today, two agencies are the principal administrators of laws governing federal regulation of railroads, the U.S. Surface Transportation Board (STB) and the U.S. Department of Transportation (U.S. DOT). The STB replaced the ICC in 1995, assuming the latter's responsibilities with regard to the remaining federal regulatory responsibilities which survived Staggers and the 1995 ICC Termination Act. Those remaining responsibilities included the subjects of mergers, abandonments, line construction and rates.

The U.S. DOT's Federal Railroad Administration (FRA) exercises regulatory authority over the safety aspects of rail transportation. The U.S. DOT Federal Highway Administration (FHWA) has responsibilities related to grade crossings, where highways and railroads intersect at the same grade. There is a sharing of these federal safety responsibilities with the states. For example, a number of states, including Arizona, have FRA-qualified track inspectors. The Arizona Corporation Commission (ACC) assists FRA in administering certain rail safety functions. Both ACC and FRA inspectors visit Arizona's railroads. ACC also shares grade crossing safety responsibilities with the Arizona Department of Transportation (ADOT - Utilities &

Railroad Engineering Section). The FHWA is the distributor of federal grade crossing safety funding to the states. ADOT's role in grade crossing safety, vis-à-vis ACC and U.S. Department of Transportation is described in Chapter 3.

United States Code has precedent over local Arizona statutes.

USC 49-10501 (Jurisdiction of STB)

(b) The jurisdiction of the Board over--

(1) transportation by rail carriers, and the remedies provided in this part with respect to rates, classifications, rules (including car service, interchange, and other operating rules), practices, routes, services, and facilities of such carriers; and

(2) the construction, acquisition, operation, abandonment, or discontinuance of spur, industrial, team, switching, or side tracks, or facilities, even if the tracks are located, or intended to be located, entirely in one State, is exclusive.

USC 49-10901 governs the application for abandonment.

(a)(1) A rail carrier providing transportation subject to the jurisdiction of the Board under this part who intends to—

(A) abandon any part of its railroad lines; or

(B) discontinue the operation of all rail transportation over any part of its railroad lines, must file an application relating thereto with the Board. An abandonment or discontinuance may be carried out only as authorized under this chapter.

Pertaining to regulation over blocked railroad crossings, the Arizona Corporation Commission has jurisdiction in Arizona:

Arizona Corporation Commission (ACC) Regulation:

R14-5-104-C (7)

- No railroad shall cause a public grade crossing to be blocked by railroad equipment in excess of 10 continuous minutes.
- Exceptions: moving in the same direction, wreck, derailment, acts of nature, mechanical failure, or other emergency conditions.

Best Practices/Peer Analysis

Following is a brief discussion of the “best practices” of selected states, with regard to their preservation and development railroads, and utilization of same, in the furtherance of state economic and transportation objectives. California was chosen because it is the leading example of state-supported intercity passenger rail service. Pennsylvania was chosen because of its exemplary freight railroad support.

California

California leads all other states with its intercity passenger rail program. The state supports Amtrak service in three corridors: *Pacific Surfliner* service connecting San Diego, Los Angeles and San Luis Obispo, *San Joaquin* service connecting Bakersfield and Oakland and Bakersfield and Sacramento, and *Capitol Corridor* service connecting San Jose, Oakland, Sacramento and Auburn. California provides over \$70 million annually in support of intercity rail service within the state.

Iowa

When there is abandonment, the State of Iowa holds a public meeting. Iowa generally has not intervened in branch line abandonments and does not acquire abandoned branch lines, and does not own any railroad. Iowa's policy has been to help someone else operate a railroad, as opposed to the state getting into the railroad business. The state has provided assistance to railroads – funding for acquisition, for example. The Iowa Legislature created the Rail Assistance Program in 1974 and has provided \$28 million in assistance. In 1980 the Legislature created the Iowa Railway Finance Authority (IRFA) (Iowa Code 327 (i) to address funding needs related to Rock Island and Milwaukee Road mass abandonments. IRFA has funded projects, and enables the state to acquire, own and operate rail lines. This authority was used by the state to help the Iowa Interstate Railroad.

The original Rail Assistance Program has been phased out and replaced by the Railroad Revolving Loan and Grant Program (RRLGP), which was created in 2005. RRLGP – still a part of the IRFA – uses loan repayment from previous programs, as well as federal transportation enhancement dollars to support railroad infrastructure projects.

Recently, Iowa has become facilitator in abandoned right-of-way purchases. While the state continues to avoid direct ownership, it does provide federal transportation enhancement dollars to counties and other local public jurisdictions to acquire these corridors under the National Trails Act.

Kansas

The State of Kansas does not acquire rail lines, but allows the formation of port authorities, which were used to purchase a portion of the bankrupt Rock Island with federal funds. Beginning in 1991 the state legislature authorized loans, and created a revolving loan fund with the interest earned. Since 1999 the legislature has appropriated \$3 million annually in state funds for this program. The state program has made loans totaling about \$9.5 million since 1999.

Kansas Department of Transportation has been very active in working with the large railroads to turn most of their branch lines into short line railroads (as opposed to abandonment of service).

Minnesota

The State of Minnesota does not own operating rail lines, but has acquired 214 miles of abandoned lines for rail-banking and trail use. One such line was studied for possible commuter rail use. Minnesota has a state revolving loan program with only state funds. This program is in four parts:

Capital Improvements, for loans to shippers to improve rail facilities. This part is rarely used for rolling stock. Repayment is required over ten years.

Rehabilitation Program, for short lines and regional railroads, with a 15 year repayment requirement. The railroad, shippers and the state participate, usually with 70-80/10/10 percent contributions.

Purchase Assistance Loans, to local authorities who wish to own and operate or contract for operation of branch lines, with a 15 year repayment requirement.

Rail User Guaranteed Loans, to assist shippers to make improvements, so as to increase rail use, with a 15 year repayment requirement.

All loans are subject to cost-benefit analysis. The total program since its inception in 1976 has loaned about \$130 million from a combination of state general funds and state bond and private money. A total of 183 capital improvement projects have rehabilitated 1,273 miles and a total of 251 miles have been purchased with state assistance.

North Dakota

North Dakota has not acquired any branch lines, and has a policy against doing so. The state does have revolving loan funds -- the Freight Railroad Improvement Program (FRIP) -- which are used to assist shippers or short lines in making rail improvements. The state does not make outright grants, only loans.

The rules governing issuance of state-funded loans are generally based on rules established under the federal Local Rail Freight Assistance (LRFA) program (now defunct), but the North Dakota DOT director has discretion in emergency situations. The state prepares a benefit-cost analysis for each loan and the ratio of benefits to costs must be at least one. North Dakota has made perhaps two dozen loans totaling over \$20 million and covering 470 miles of rail line.

Oklahoma

Oklahoma owns about 850 miles of former branch lines, most of it acquired following the Rock Island bankruptcy. The legislature created the Oklahoma Railroad Maintenance Authority to manage these lines and the Oklahoma Railroad Maintenance Revolving Fund to maintain the rights of way. 95 percent of these state-owned lines are

leased out to short line operators; the state receives a percentage of the revenue. All of the funds are appropriated by the legislature with no federal or local funding.

Pennsylvania

Pennsylvania likely has the best state rail preservation and development program in the country. No state exceeds Pennsylvania in number of railroad operating companies, while only four states — California, Illinois, Ohio and Texas — exceed the Keystone State in railroad mileage operated.¹ Pennsylvania has invested \$190 million in its rail freight infrastructure since 1990. These investments include the Rail Freight Assistance Program (RFAP) (\$64 million), Capital Budget Grants (\$90.7 million) and doublestack clearance projects (\$35.8 million). Excepting the doublestack clearance projects, virtually all of this investment has been in regional and small railroads, in recognition of the fact that these railroads are a vital component of the state's transportation system and economic well-being.

RFAP, created by the Commonwealth's Rail Freight Preservation & Improvement Act of 1984, provides funds to preserve essential rail freight service and stimulate employment through generation of new or expanded rail freight service. Since 1997, RFAP projects have helped create 9,368 jobs and helped reduce highway congestion by keeping approximately 2.1 million trucks off the highway.² The funding appropriation for RFAP was increased from \$3.5 million in 1995 to \$8.5 million through the fall of 2001. Capital Budget Grants have typically been funded at \$10 million annually, and recently has been funded at an annual level of \$20 million.

South Dakota

South Dakota owns some 425 miles of railroad, some of which is rail-banked. Until November 2005, the state owned as much as 800 miles of railroad, but sold the 375-mile Core System to BNSF Railway, which had operated the trackage under lease.

The state has a Revolving Trust Fund which grants or loans money for rehabilitation or new construction on these lines.

Washington

Concerned about rail line abandonment, the state legislature in 1983 established the Essential Rail Assistance Account in the state general fund and authorized formation of county rail districts. Funds are available as low interest loans to counties, for acquiring and maintaining branch lines and operating essential rail service. The state also authorizes rail banking – state or local purchase of abandoned rail rights of way.

¹ "Railroad Facts 2002 Edition", Association of American Railroads, page 46.

² Data provided by PENNDOT.

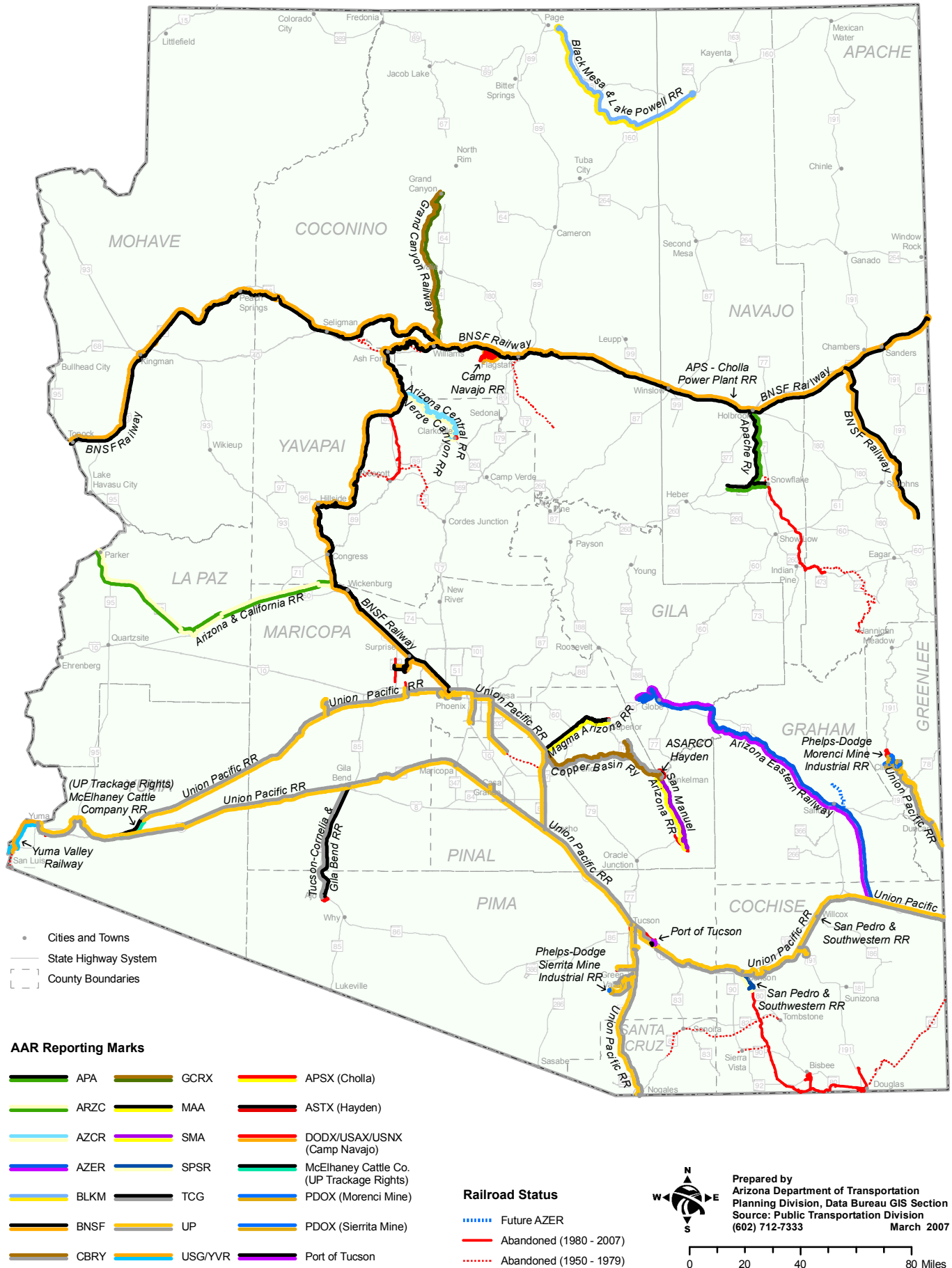
Arizona's Railroad Network

Arizona's railroad network is shown in the 2007 Arizona Railroads map. The network is comprised of two Class I railroads³, BNSF Railway (BNSF) and Union Pacific Railroad (UP), and a number of short line, terminal, industrial, switching, passenger and tourist railroads. In addition, Arizona has one single-purpose coal haul railroad, the Black Mesa & Lake Powell Railroad (BLKM), which is isolated and not connected to the nationwide railroad system, as every other Arizona railroad is. There are currently over 2,200 railroad miles in Arizona.

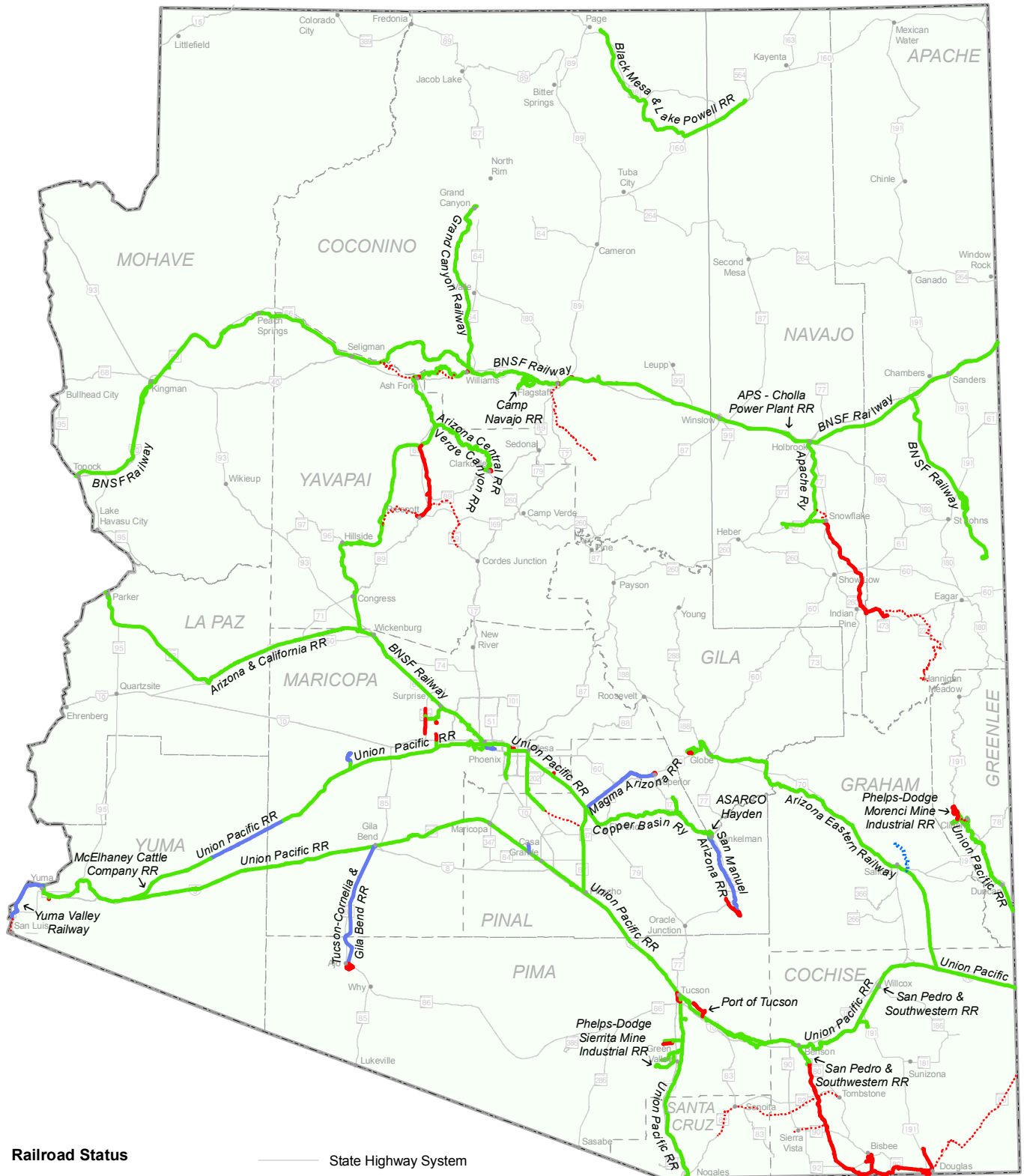
Arizona's railroads originate five million tons of freight railroad traffic from locations within Arizona, including glass and stone products, waste and scrap, primary metal products, chemicals and metallic ores. See Figure 1. Arizona's freight railroads bring to Arizona and terminate within the state almost 31 million tons of freight traffic, including coal, lumber and wood products, glass and stone products, farm products and food products. See Figure 2. Figure 3 shows the combination of originating and terminating traffic.

³ As defined by the Surface Transportation Board, a Class I Railroad is one with 2004 operating revenues of at least \$289.4 million. This figure is adjusted annually for inflation.

Arizona Railroads



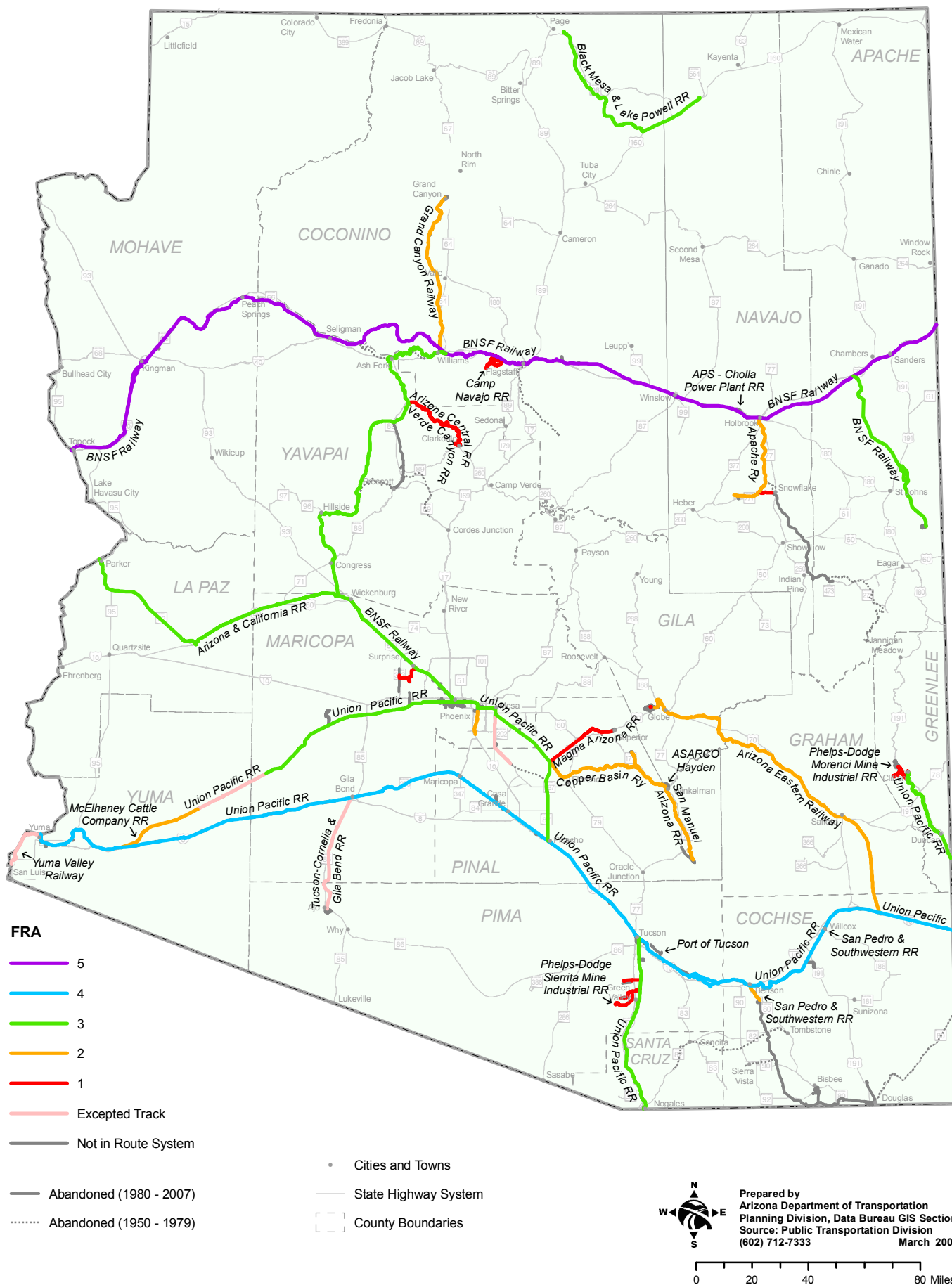
Arizona Railroads (Service Status and Ownership)



Prepared by
Arizona Department of Transportation
Planning Division, Data Bureau GIS Section
Source: Public Transportation Division
(602) 712-7333
March 2007

0 20 40 80 Miles

Arizona Railroads FRA Track Class



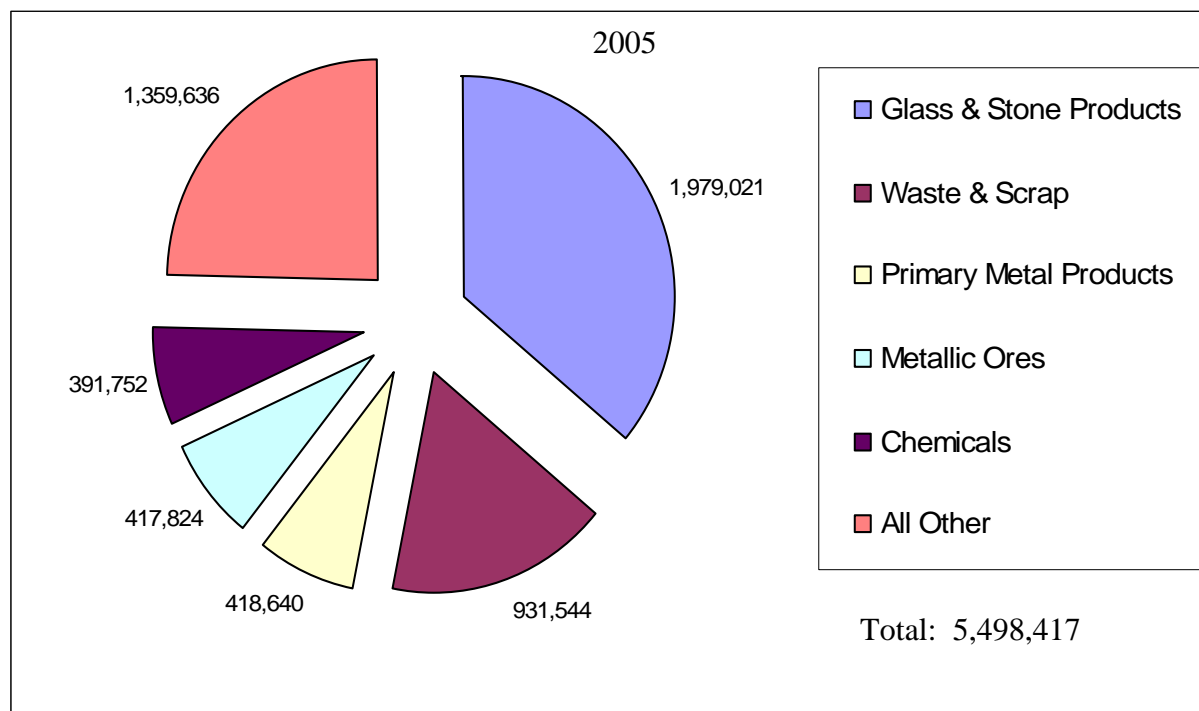
Arizona Train Service Type



Figure 1
Freight Railroad Traffic in Arizona

Tons Originated 2005

	Tons	Percent
Glass & Stone Products	1,979,021	36%
Waste & Scrap	931,544	17%
Primary Metal Products	418,640	8%
Metallic Ores	417,824	8%
Chemicals	391,752	7%
All Other	1,359,636	25%
Total	5,498,417	100%

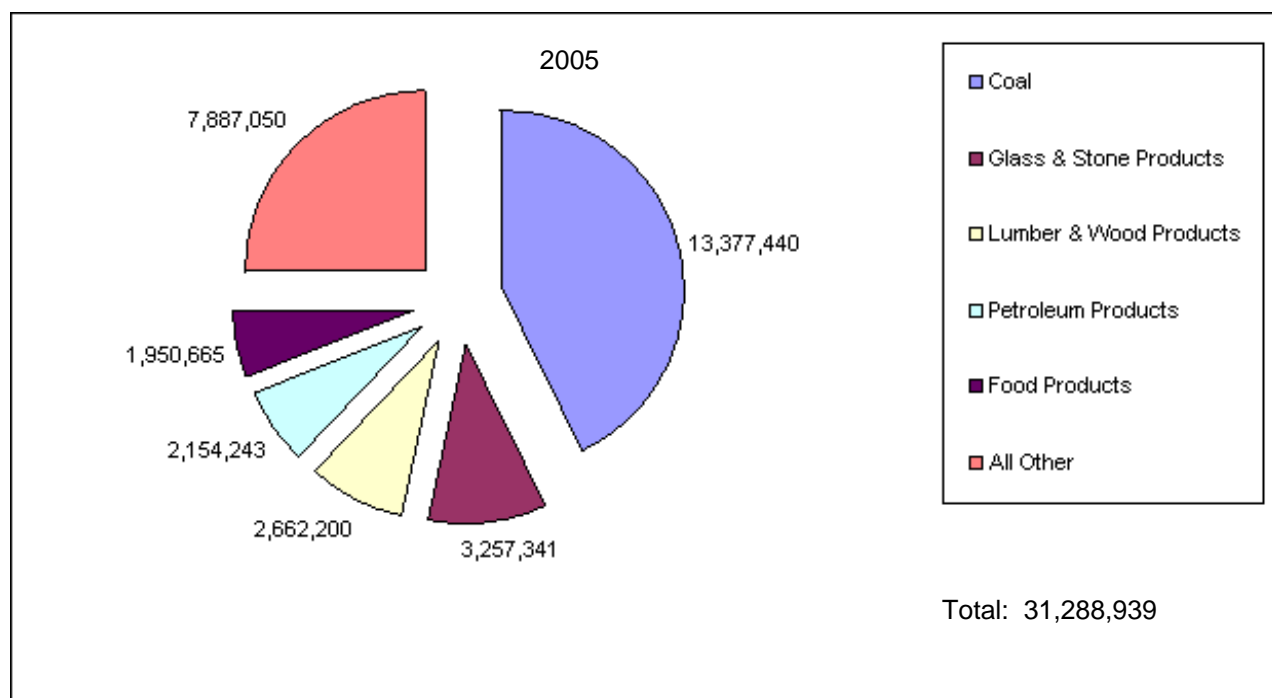


Source: Association of American Railroads

Figure 2

**Freight Railroad Traffic in Arizona
Tons Terminated 2005**

	Tons	Percent
Coal	13,377,440	43%
Glass & Stone Products	3,257,341	10%
Lumber & Wood Products	2,662,200	9%
Petroleum Products	2,154,243	7%
Food Products	1,950,665	6%
All Other	7,887,050	25%
Total	31,288,939	100%

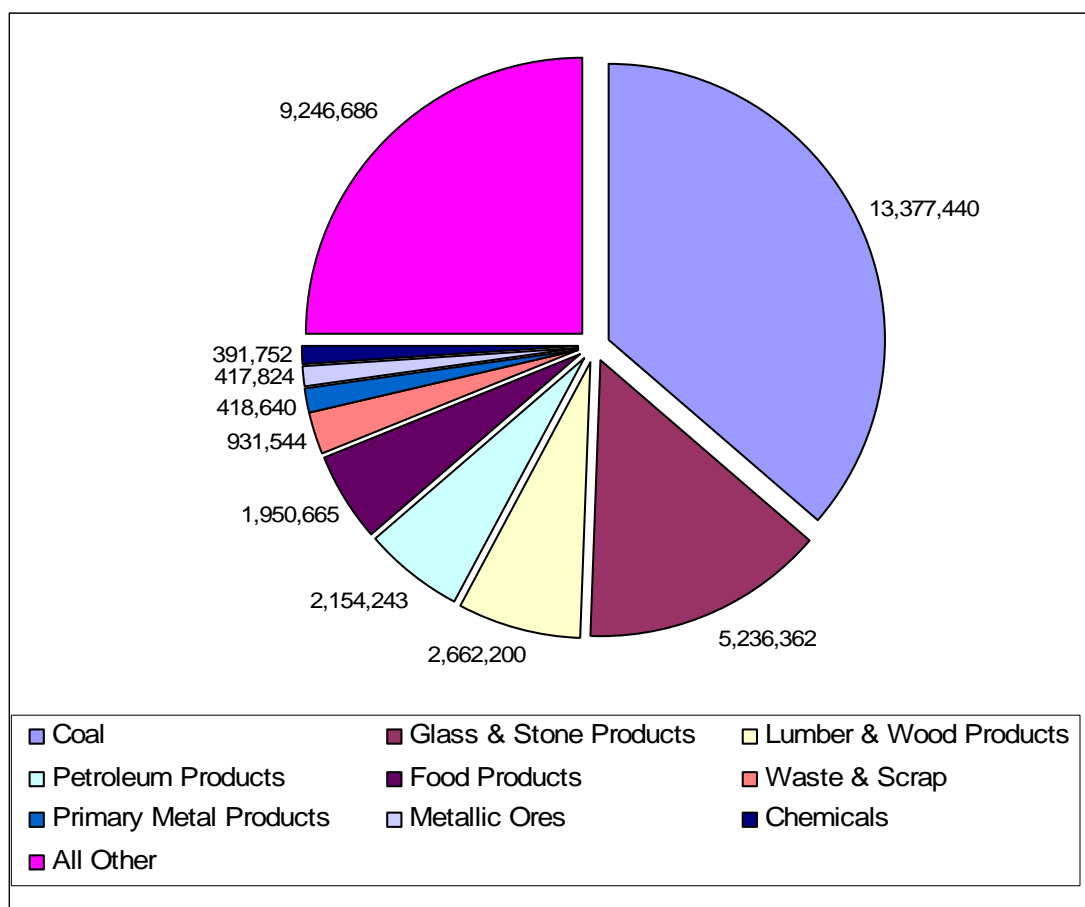


Source: Association of American Railroads

Figure 3
Freight Railroad Traffic in Arizona

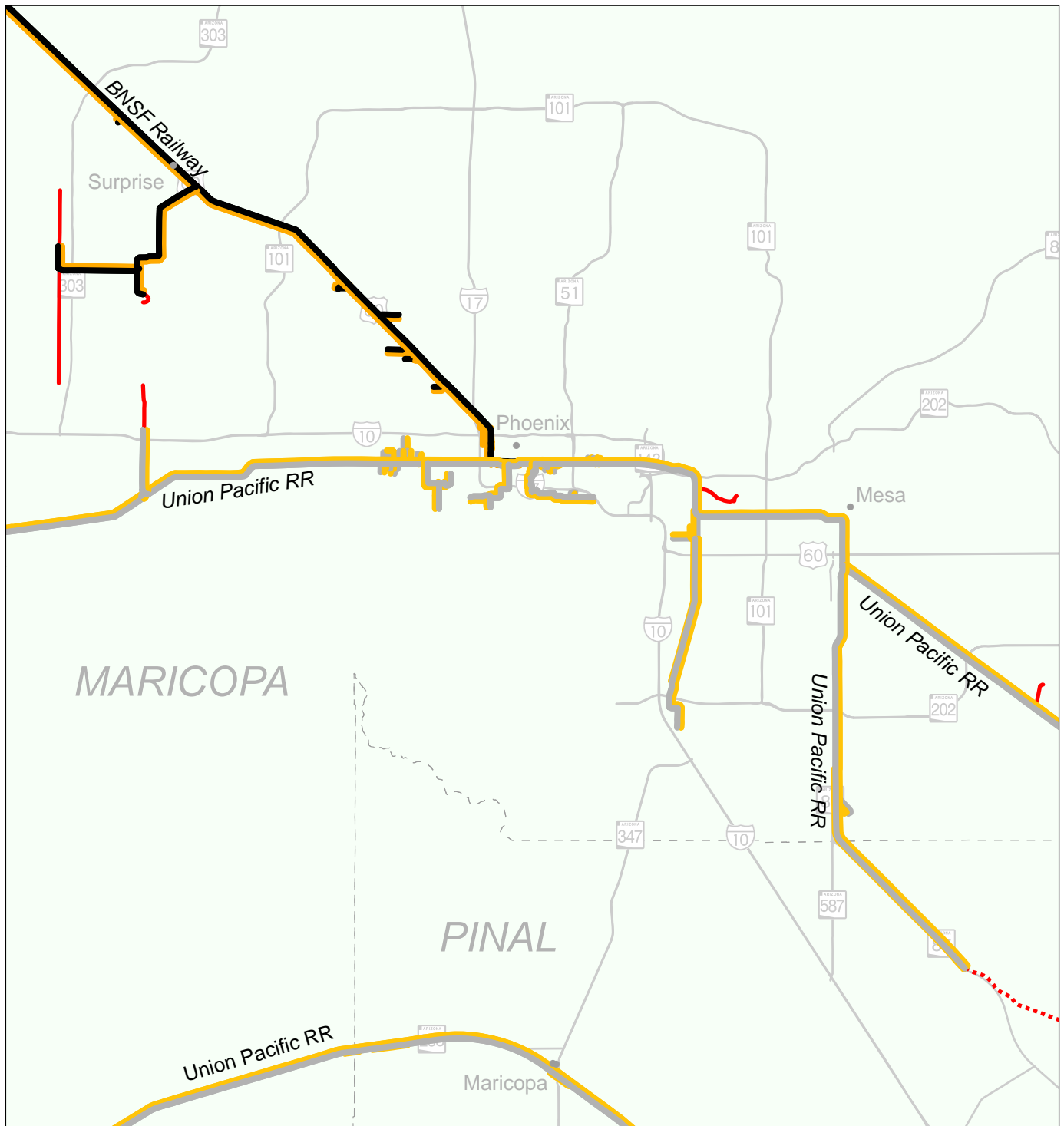
Tons Originated and Terminated 2005

	Tons	Percent
Coal	13,377,440	36%
Glass & Stone Products	5,236,362	14%
Lumber & Wood Products	2,662,200	7%
Petroleum Products	2,154,243	6%
Food Products	1,950,665	5%
Waste & Scrap	931,544	3%
Primary Metal Products	418,640	1%
Metallic Ores	417,824	1%
Chemicals	391,752	1%
All Other	9,246,686	25%
Total	36,787,356	100%



Source: Association of American Railroads.



Phoenix - Area Central Arizona Region






AAR Reporting Marks

 BNSF  UP

Railroad Status

 Abandoned (1980 - 2007)
 Abandoned (1950 - 1979)

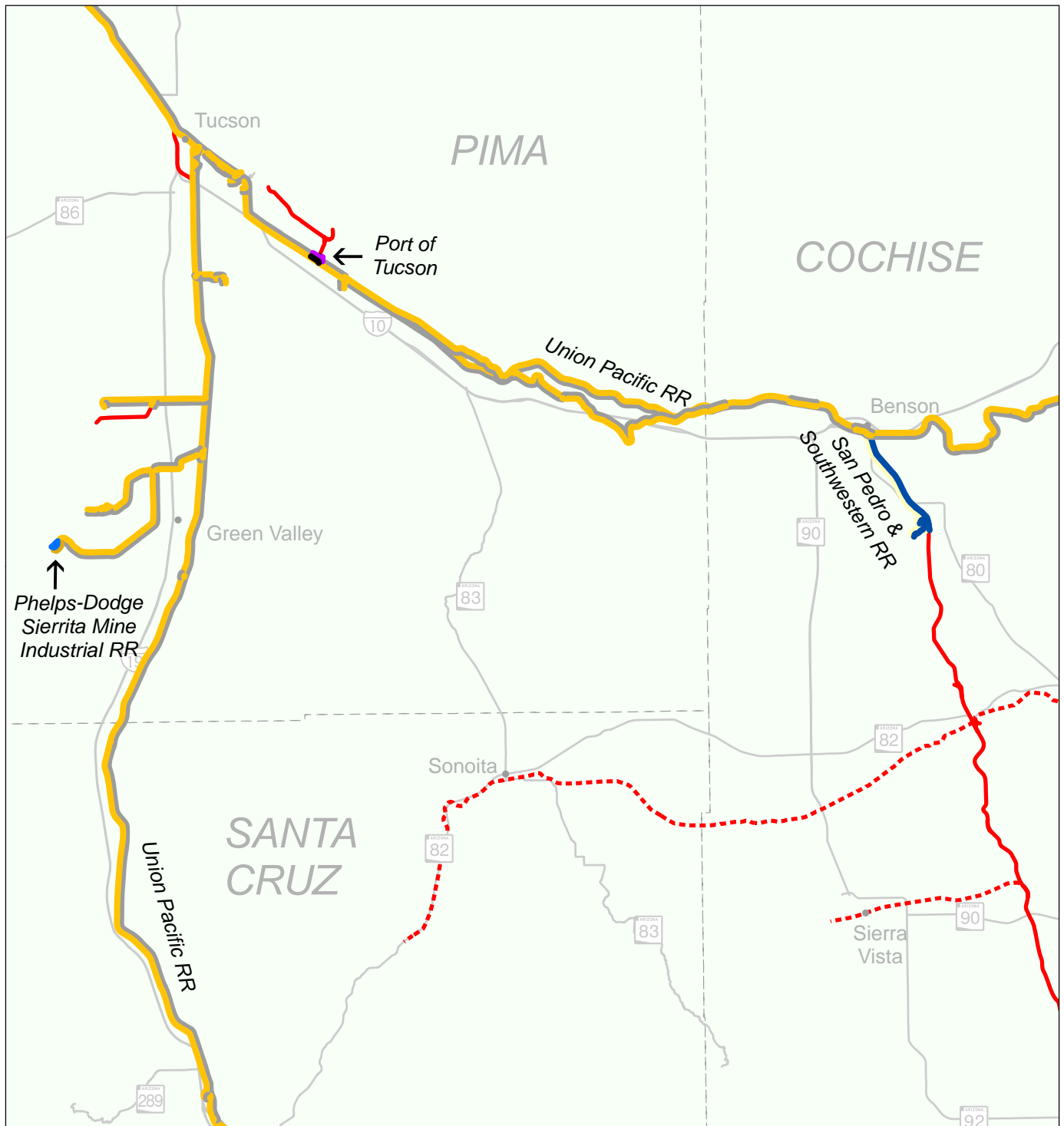
 Cities and Towns
 State Highway System
 County Boundaries



Prepared by
 Arizona Department of Transportation
 Planning Division, Data Bureau GIS Section
 Source: Public Transportation Division
 (602) 712-7333 March 2007

0 2.5 5 10 Miles

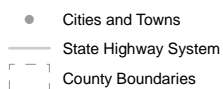
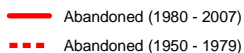
Tucson Area - Southeastern Arizona Region



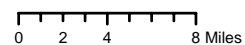
AAR Reporting Marks



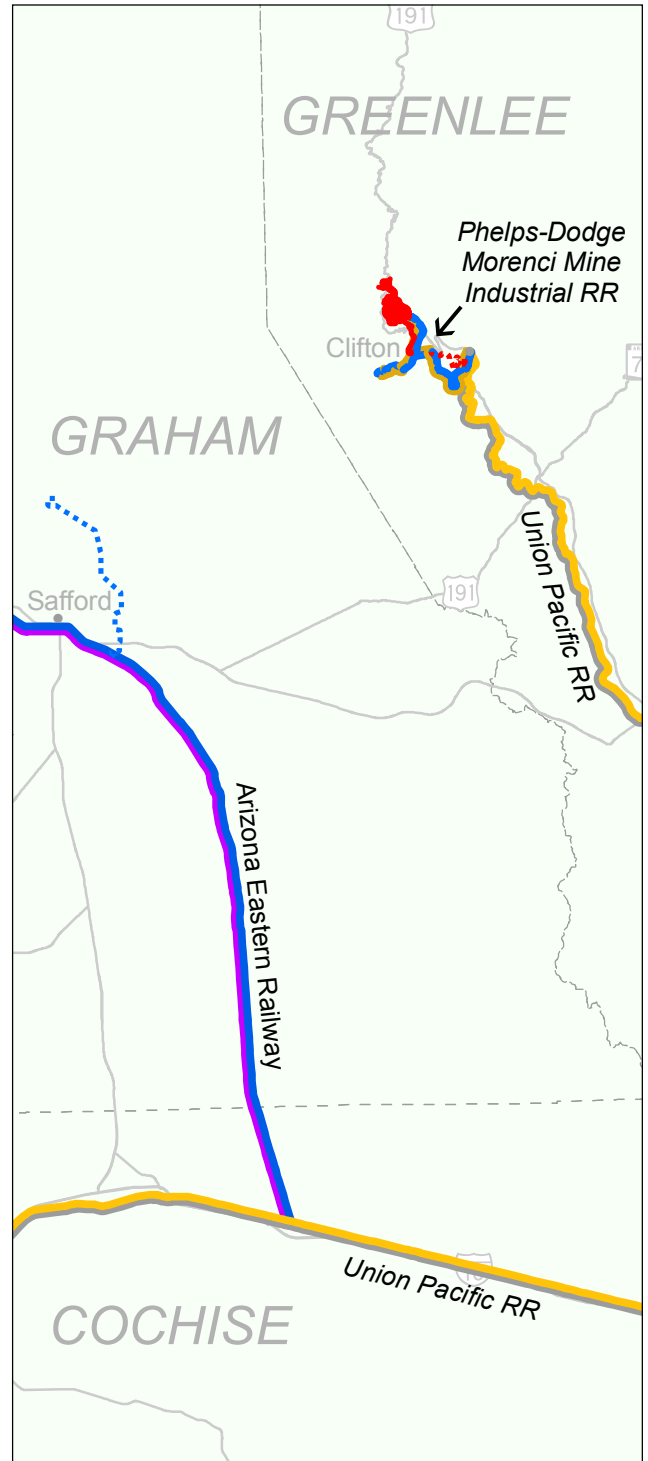
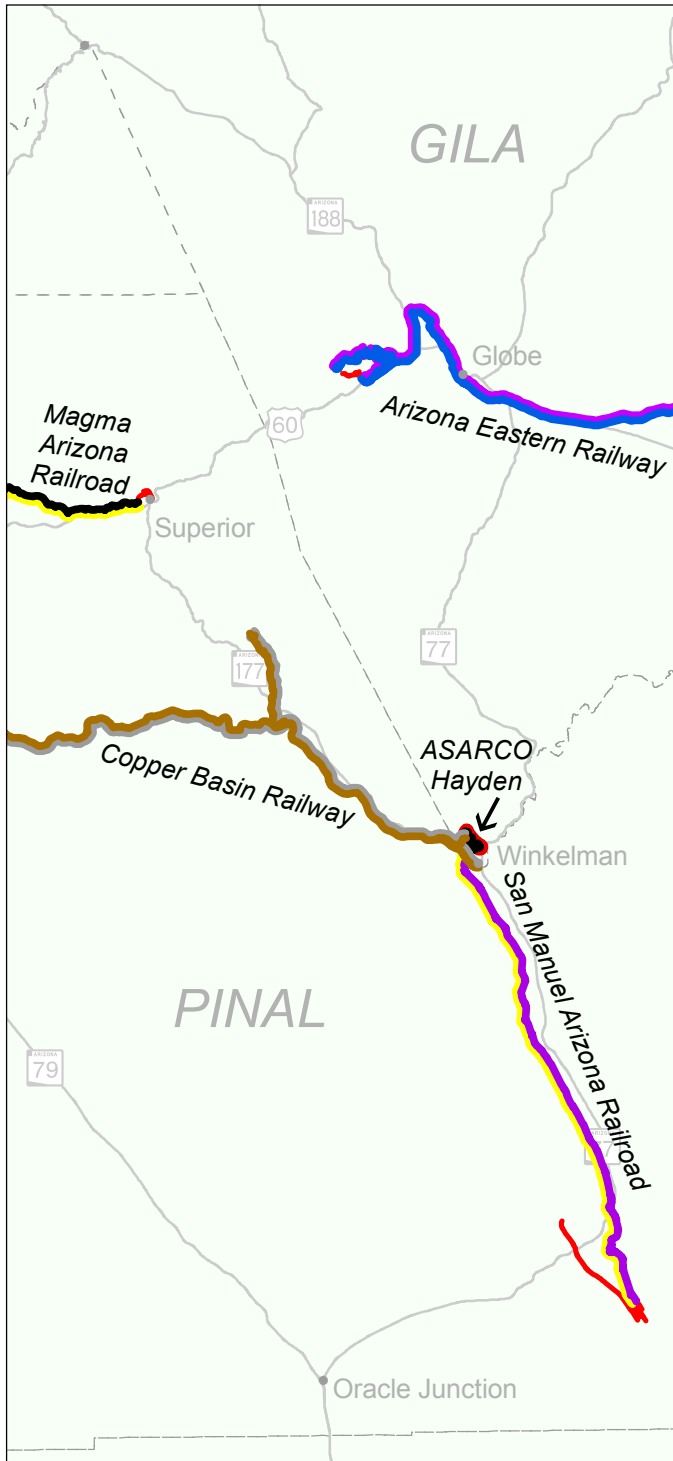
Railroad Status



Prepared by
 Arizona Department of Transportation
 Planning Division, Data Bureau GIS Section
 Source: Public Transportation Division
 (602) 712-7333
 March 2007



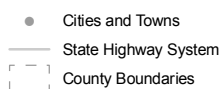
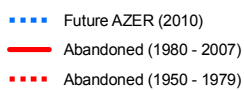
Central - Eastern (Copper Country) Arizona Region



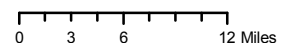
AAR Reporting Marks



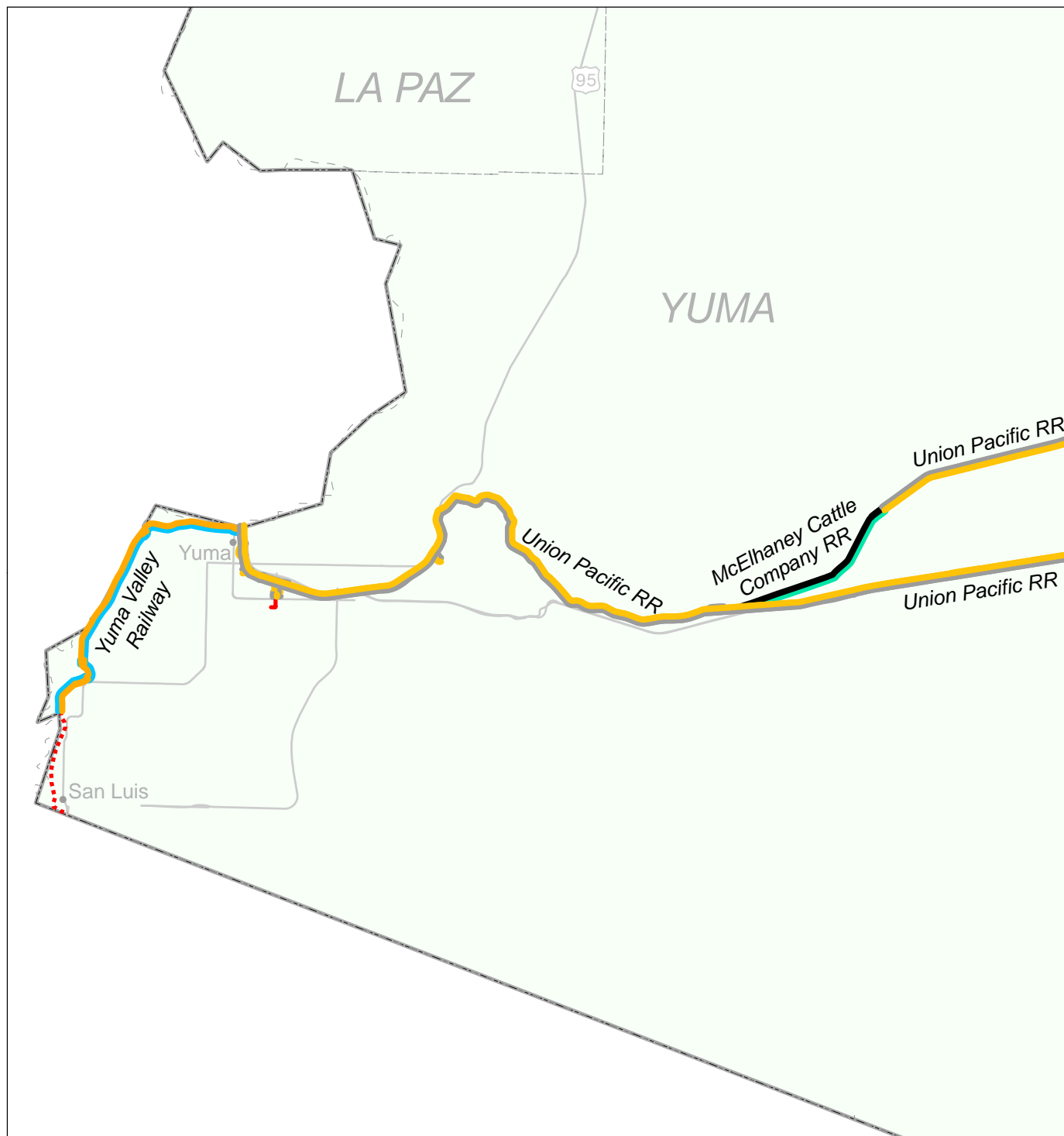
Railroad Status



Prepared by
Arizona Department of Transportation
Planning Division, Data Bureau GIS Section
Source: Public Transportation Division
(602) 712-7333
March 2007



Yuma Area - Southwestern Arizona Region



AAR Reporting Marks

— UP
 — USG/YVR
 — McElhane Company RR (UP Trackage Rights)

Railroad Status

— Abandoned (1980 - 2007)
- - - Abandoned (1950 - 1979)

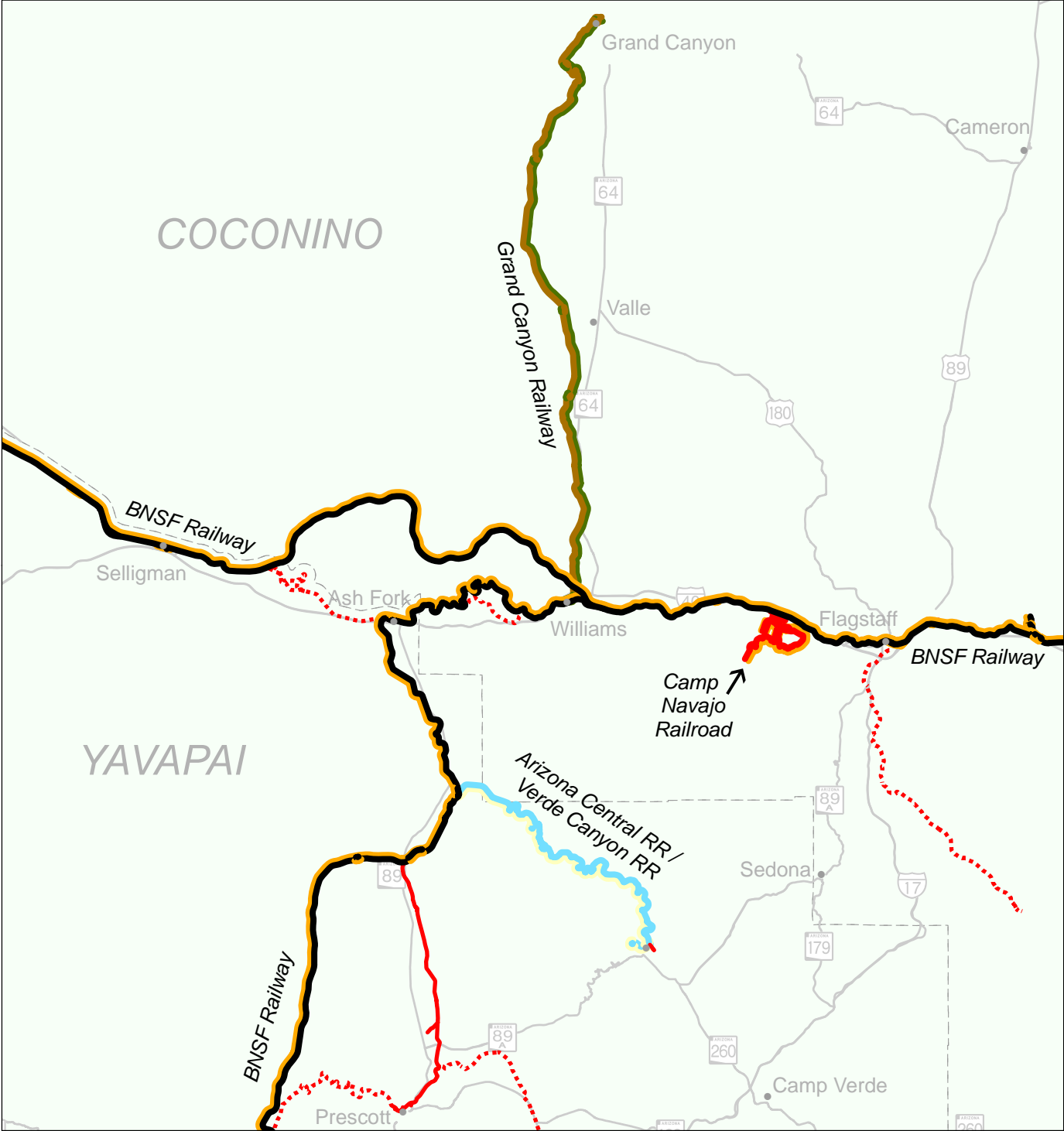
• Cities and Towns
 — State Highway System
 [- -] County Boundaries



Prepared by
 Arizona Department of Transportation
 Planning Division, Data Bureau GIS Section
 Source: Public Transportation Division
 (602) 712-7333 March 2007

0 3.75 7.5 15 Miles

Northern Arizona Region Railroads



AAR Reporting Marks

- AZCR (light blue line)
- GCRX (green line)
- BNSF (thick black line with yellow border)
- DODX/USAX/USNX (Camp Navajo) (red line with yellow border)

Railroad Status

- Abandoned (1980 - 2007) (dashed line)
- Abandoned (1950 - 1979) (dotted line)

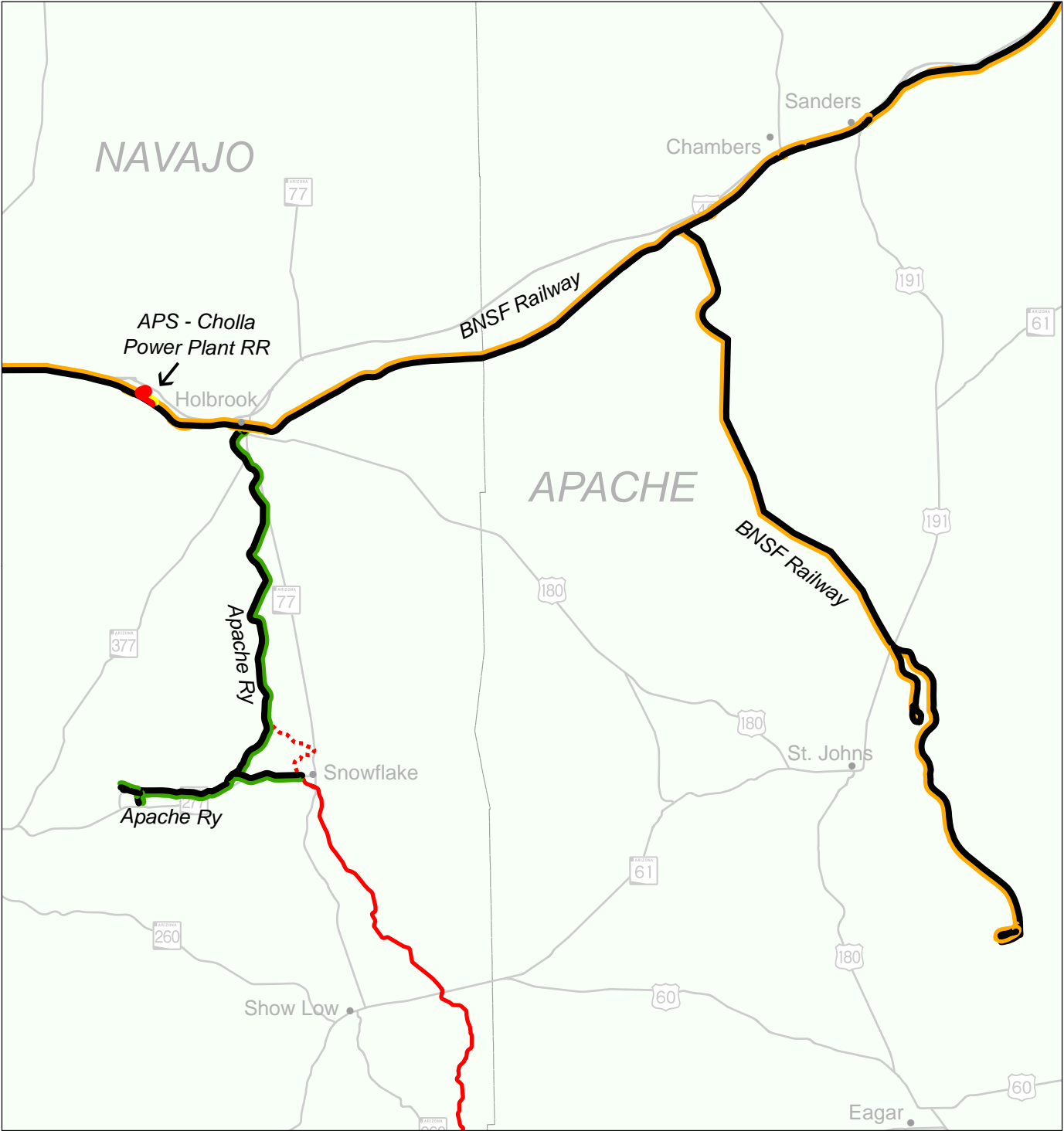
- Cities and Towns (black dot)
- State Highway System (grey line)
- County Boundaries (dashed line)



Prepared by
Arizona Department of Transportation
Planning Division, Data Bureau GIS Section
Source: Public Transportation Division
(602) 712-7333
March 2007

0 4.5 9 18 Miles

Northeastern Arizona Region Railroads



AAR Reporting Marks

APA BNSF APSX (Cholla)

Railroad Status

Abandoned (1980 - 2007)
Abandoned (1950 - 1979)

Cities and Towns
State Highway System
County Boundaries

Prepared by
Arizona Department of Transportation
Planning Division, Data Bureau GIS Section
Source: Public Transportation Division
(602) 712-7333
March 2007

0 5 10 20 Miles

Class I Railroads

There are two predominate Class I railroads, BNSF and UP, that cover the western United States. Both railroads serve Arizona, BNSF north of Phoenix and UP to the south. The mainlines of both railroads cross Arizona and pass through to California on the west and to New Mexico on the east.



BNSF Railway (BNSF) (formerly Burlington Northern Santa Fe Railway)

Transcon. The BNSF “Transcon” (transcontinental main line originally built by AT&SF Railway in 1880-1883 and double tracked in 1913) connects Los Angeles and Chicago, handles two-thirds of BNSF’s intermodal traffic⁴, and passes through northern Arizona including the communities of Sanders, Holbrook, Winslow, Flagstaff, Williams, Seligman and Kingman. The 2000 Arizona State Rail Plan Update noted continued growth of traffic on this double-tracked route, then carrying up to 80 trains per day. Now, six years later, Transcon traffic through Arizona is at about 120 trains a day—an average of one train every 12 minutes. BNSF currently interchanges with three railroads on its Transcon within Arizona, Apache Railway at Holbrook, APS Cholla Power Plant industrial lead track at Joseph City and Camp Navajo Railroad at Bellemont.

By far the greatest amount of traffic on this line, more than 90 percent, is intermodal, a term which in freight railroading refers to the movement of containers or trailers on railcars. Intermodal traffic is usually moved by truck on either end of the rail portion of the trip. In the case of the east-west BNSF Transcon, virtually all intermodal traffic is containers double-stacked on railcars. In 2004 intermodal overtook coal as the largest revenue generator for Class I railroads. On the Transcon, containers filled with merchandise from Asia are headed eastward; primarily empties make the return trip westward.

Although the Transcon is double-tracked throughout its approximately 390 route-miles within Arizona, there remain a few segments between Arizona and Chicago where it is

⁴ Jeff Stagl, “7 Lanes ... 7 Stories”, *Progressive Railroading*, October 2006, page 15.

still single-tracked. In 2006, BNSF will add 32 miles of double track and eight miles of triple track to this high capacity route.⁵ BNSF intends to complete double-tracking of the Transcon by the end of 2008.⁶

The Transcon is subdivided into operating divisions. The Gallup Subdivision lies between Belen Junction, New Mexico, and East Winslow, Arizona, and the Seligman Subdivision, between East Winslow and Needles, California. On both subdivisions, main line track is 136 pound continuous welded rail (CWR). Maximum track speed is 90 miles per hour (mph) passenger, 70 mph freight. The method of train control is CTC, or Centralized Traffic Control, a train movement system by which a remote dispatcher controls the throwing of switches and clearing of signals. Width of right of way varies, but is predominantly 200 feet. Maximum gross weight of railcar is 143 tons (286,000 pounds).

The Transcon features two short spurs serving aggregate industries, cinder ballast at Darling (Winona), AZ— MP 328 and shipley rock at Shipley, AZ — MP 461.4. Additionally, Railhead (located in east Flagstaff — MP338.8) was a major bulk transload and wood products facility from the late 1950s to the late 1990s. Much of the material used to build Glen Canyon Dam at Page was offloaded here in the early 1960s. This facility and track was removed in the early 2000s and has been developed into an expanded mall and shopping center. BNSF renamed the former station of Railhead to McPhetridge in the late 90s, in honor of one of their longtime northern Arizona employees.



**Eastbound Intermodal train on
the BNSF Transcon, Bellemont, AZ.**

BNSF renamed the former station of Railhead to McPhetridge in the late 90s, in honor of one of their longtime northern Arizona employees.

The BNSF Transcon through Arizona also carries Amtrak *Southwest Chief* intercity passenger service, described in Chapter 4.

Phoenix Subdivision. Another BNSF rail line, the Phoenix Subdivision (nicknamed the “Peavine”), connects the Transcon (at Williams Jct.) with Phoenix and was originally built in 1893-1895. (As described later in this report, Phoenix is also served by BNSF via the Arizona & California Railroad Company, which carries BNSF “bridge traffic” between its termini -- Cadiz, California, and Matthie (near Wickenburg), Arizona, the latter being on the Peavine.) The 209-mile Phoenix Subdivision, which interchanges with Union Pacific at its downtown Phoenix end, is single-tracked with almost all 131 and 136 pound CWR but with short stretches of jointed rail and sections of other weight rail. BNSF Railway currently interchanges with four railroads on its Phoenix Subdivision, the Grand Canyon Railway at Williams, Arizona Central Railroad at Drake,

⁵ Tom Murray, “The China Factor”, *TRAINS*, August 2006, page 30.

⁶ Jim Wrinn, “Out of the storm and into the light”, *TRAINS*, August 2006, page 4.

Arizona & California Railroad at Matthie, and Union Pacific Railroad at Phoenix. (The Atchison, Topeka & Santa Fe Railway (ATSF) discontinued daily rail passenger service on the Peavine in April 1969.)

The line is unsignalled (often called “dark territory”) and the train control protocol is Track Warrant Control (TWC), by which all train movements are governed by oral and/or written instructions issued by the dispatcher, often by radio. Maximum freight speed is 49 mph. Width of right of way varies but is predominantly 200 feet. Maximum gross weight of railcar is 143 tons.

Since 1994, both Beardsley Siding (MP 169.2) and Skull Valley (MP 66.2/80.6) have been double tracked with signaled switches. A BNSF official stated in 2006 that additional portions of the Phoenix Subdivision may be double-tracked and signaled. BNSF identified the potential double-tracking candidate locations as Tucker (a railroad location southwest of Drake and north of Skull Valley), Hillside and Congress.⁷ It is also understood that Ash Fork yard may be expanded.

BNSF operates a major intermodal facility in Glendale, with a capacity of between 100,000 and 250,000 lifts per year.⁸ In addition to intermodal traffic, BNSF brings automobiles to a trans-load facility in the City of El Mirage. BNSF’s primary switching facility is Mobest Yard (MP 191.6) near downtown Phoenix. A relatively short 3,000 ft yard built in 1895; it has been refurbished in the past few years to handle heavier trains in addition to newly resurfaced transload-team tracks that handle cuts of unit trains. BNSF’ fueling facility, turntable, repair shop and crew terminal are also located within Mobest Yard. The BNSF Phoenix Yard (MP 193.7) on the Phoenix Subdivision, lies between the 17th Avenue and 9th Avenue, and is used to stage trains for the lumber, chemical and cement industries in the area. South of the Phoenix yard, the 3-mile long South Phoenix spur, affectionately called “The Sidewinder” by BNSF crews, crosses the UPRR mainline with a controlled interlocking. This spur serves the lumber, aggregate, scrap steel, chemical, transload and cement customers of South Phoenix.

The nine-mile-long Ennis Subdivision connects Fennemore (a railroad location near the intersection of Olive Avenue and Cotton Lane) with Ennis (another railroad junction location, in El Mirage adjacent to Grand Avenue, near El Mirage Road). Ennis is a station at MP 173.6 on the Phoenix Subdivision. The primary commodities carried on Ennis Sub are natural gas (stored in underground caverns), fertilizer and lumber. This line was built between 1928 and 1938. The two-mile-long Webb Spur connects Luke Air Force Base to Ennis Subdivision at MP 5.3; however the connection track into Luke AFB at the south end of the spur has been severed by a roadway project. Maximum speed on Ennis Subdivision, which is not signaled, is ten mph. Maximum gross weight of railcar is 143 tons. The City of Surprise is working with BNSF and private developers to create a new industrial park along the Ennis Subdivision. New warehouse districts, distribution centers and commercial enterprises are expected to nearly double the business capacity of this BNSF branch by 2010.

⁷ ADOT e-mail June 19, 2006.

⁸ “Intermodal Yards, 2005 Volumes”, *TRAINS*, September 2006, pages 54-55.

The Maricopa Association of Governments (MAG) “High-Capacity Transit Study”, dated June 30, 2003, states that BNSF facilities in the MAG region are near capacity, in a growing region, and require capital investment to stay ahead of demand. The study further says that BNSF has presented the idea of relocating its yard facilities northwest of El Mirage.⁹

It has been reported that BNSF is considering moving its primary yard operations out of Mobest Yard in downtown Phoenix. BNSF has acquired land at Surprise, and is considering development of BNSF facilities in that vicinity.¹⁰

The number of trains per day on the Phoenix Subdivision is approximately twenty (including locals), ten in each direction.¹¹

The Prescott Branch. In 1992, the 28-mile Prescott Branch was removed and scrapped between the siding of Abra junction (Paulden) and the City of Prescott. The line was a part of the original Peavine main line to Phoenix, but a 1962 bypass (around the three percent grades of Ramsgate Hill and the Sierra Prieta mountains at Iron Springs, west of Prescott), allowed ATSF to build a modern, welded rail, level route between Paulden (Abra) and Skull Valley (north and west of Prescott, respectively).

The remaining 28-mile branch segment of the line continued to serve the Prescott area for an additional two decades. Due to dwindling traffic volumes on the branch by the early 1980s, ATSF filed with the I.C.C. for a 3-year abandonment application of the branch on June 20, 1983.

On the afternoon of September 22, 1983, unbeknownst to the local train crew, the final train departed Prescott. The Ash Fork-bound freight had departed with surplus tank and flatcars stored in Prescott after delivering a refrigerator car to a local distributor.

On the evening of September 28, 1983, Tropical Storm Octave washed out over one mile of track on of the branch. The storm, which lasted ten days, caused \$370 million in damage, injured thousands and cost 14 Arizonans their lives. Due to their previous filing for abandonment of the line, ATSF declined to spend the \$100,000 to repair the track. The washout had stranded the refrigerator car in Prescott, and it later had to be reclaimed and hauled out by semi-truck trailer. Eventually, this line was officially granted abandonment status by the I.C.C. in May 1984.

From 1984-1991, numerous attempts were made by the City of Prescott and other private parties to save the line after ADOT determined that the line was salvageable for tourist and freight purposes, albeit at a financial loss. At one point in 1986, a private developer vowed to spend \$1 million to restore the line, but flagging negotiations with the city, railroad and Yavapai tribe ended this venture. By 1987, ATSF offered the city the entire 28-mile line with rolling stock and locomotives for approximately \$700,000,

⁹ “High-Capacity Transit Study”, Maricopa Association of Governments, Final Report, page 25.

¹⁰ Interview with BNSF official, October 31, 2006.

¹¹ Pat Flannery, “Rail jam could slow valley’s economy”, *Arizona Republic*.

but the city could not come up with the money although over \$150,000 remained in a City fund dedicated to rail preservation. By 1990, the City had hired a consultant to study the feasibility of restoring, owning and operating the line. The study reported that over \$1 million would be needed to restore the line, but at this point the city council voted not to pursue purchase of the line despite protests from the Chamber of Commerce and residents. ATSF sold the branch line to a rail contractor and the line was scrapped and removed in May 1992. BNSF later built an additional main line siding at Abra and retained one mile of the Prescott Branch at Abra-Paulden for storage. Portions of the roadbed have been preserved and since 1995 many miles of the old line now serve as the Peavine Trail system near Watson Lake and Granite Dells.

Coronado and Springerville Subdivisions. The BNSF Coronado Subdivision, 45.4 route miles, links the Salt River Project Coronado Power Plant with the BNSF Transcon at East and West Coronado Junctions, about 36 miles from the New Mexico border. The Springerville Subdivision, 29.7 route miles, connects the Tucson Electric Power Springerville Generating Station with the Coronado Subdivision at Tepco Junction.

These lines were built between 1979 and 1980 and are co-owned by both Salt River Project (SRPX) and Tucson Electric Power (TEPX). Both plants were built to provide power to the growing Arizona population. The companies contract with BNSF to operate daily coal train service. SRPX and TEPX utilize a local private contractor for maintenance of way (MOW) services on the lines. Freight car service and repair for the large fleets of SRPX and TEPX coal hoppers is provided onsite by a private contractor. Additionally, each plant owns a small car-mover for switching. Both plants and their properties are highly secure, with 24-hour patrols and surveillance.

Both subdivisions are unsignalled, operate by TWC, employ 115-119 pound CWR, and have a maximum track speed of 49 mph. Both have bridge and equipment weight restrictions of 143 tons maximum gross weight of railcar. BNSF coal trains on these lines traditionally use distributed power units: locomotives in the middle or rear of each train in order to assist with traction and braking.

On the Coronado Subdivision, coal from McKinley Mine (New Mexico), Lee Ranch (New Mexico) and Wyoming's Powder River Basin is transported twice daily to the Salt River Project Coronado Power Plant located near St. Johns, Arizona. The average train length is 120 cars, delivering up to 12,000 tons per train.

On the Springerville Subdivision, coal from Lee Ranch (New Mexico) is delivered up to twenty times monthly, and coal from Wyoming's North Antelope Mine is delivered once per week to the Tucson Electric Power Plant generating station located near Springerville. The average train length is 110-130 cars, delivering up to 13,000 tons per train.

All coal train and crew operations are based in Gallup, New Mexico. Additionally, a Gallup-based local train nicknamed "The Rattler" provides what are known as "mine sweeper" duties: miscellaneous switching along the lines, picking up out-bound fly ash

and lime cars, outbound bad-order cars and the occasional car of anhydrous ammonia. This service is provided two to three times per week.

As a part of BNSF's efforts to minimize and close grade-crossings, many of the lines' few private grade crossings have been closed or upgraded with stop signs and crossbucks. All of the state highway and county road owned grade crossings are equipped with gates and lights.



**Eastbound Intermodal train on the BNSF Transcon, Canyon Diablo bridge, AZ.
The 12,600ft San Francisco Peaks rise in the distance.**

Route-Miles	690 (main line and branch lines)
Annual Carloads	293,381 (originating or terminating in Arizona for 2006)
Commodities	Intermodal, automobiles, cement, coal, chemicals, lumber products, general merchandise.
Rail Weight	136 CWR, sections of 115, 119 CWR 90, 115, 119 bolted / 136 CWR on branchlines
Max. Track Speed	70 mph (90mph – Amtrak)



Union Pacific Railroad (UP)

As is the case with BNSF, UP system east-west traffic is more robust than north-south traffic. In terms of number of trains per day, Union Pacific Railroad's most important route is its central corridor – Chicago westward through Nebraska and Wyoming, there splitting into three branches serving the Pacific Northwest, central California and southern California. The UP system also has significant amounts of traffic between Chicago and Texas, and between El Paso and southern California.

Sunset Route. The latter route, the former Southern Pacific “Sunset Route”, passes through Arizona: Cochise, Benson, Tucson, Picacho, Casa Grande, Maricopa, Gila Bend, Wellton and Yuma and was originally built from 1877-1881. In 2001, *TRAINS* magazine reported a high of 37 trains per day on this route.¹² Traffic on the Sunset Route today varies from 44 to 49 trains per day, on average.¹³ Tonnage in million gross tons (cars, contents and locomotives) on the Sunset Route varied, depending on route segment, from 74 to 98 in the year 2005.¹⁴ UP officials are considering advancing the schedule to complete double-tracking the Sunset Route between Los Angeles and El Paso, perhaps finishing the project in three to five years.¹⁵ UP is working with local communities along the line to address impacts from the double-track project.

Within Arizona, UP connects with six railroads on its Sunset Route: the Arizona Eastern Railway at Bowie, the San Pedro & Southwestern Railroad at both Willcox (a switching operation) and Benson, Port of Tucson at Tucson and the dormant Tucson, Cornelia & Gila Bend Railroad at Gila Bend, and the dormant Yuma Valley Railway at Yuma.

UP's Tucson Service Unit is responsible for UP operations in Arizona, and has as subordinate units the Lordsburg Subdivision (within Arizona, from the New Mexico border to Tucson), Gila Subdivision (Tucson-Yuma), Yuma Subdivision (within Arizona, 0.37 miles in Yuma), Phoenix Subdivision (Picacho-Phoenix-point west of Arlington), Nogales Subdivision (Tucson-Nogales) and Clifton Subdivision (Lordsburg NM-Clifton AZ). Amtrak's *Sunset Limited* passenger train traverses this line thrice weekly.

¹² “Union Pacific Trains per Day, Map of the Month”, *TRAINS*, November 2001.

¹³ Phone conversation with Union Pacific, October 27, 2006.

¹⁴ Union Pacific Tonnage Chart for Year 2005, Tucson Service Unit, March 1, 2006.

¹⁵ “UP sets revenue and carload records, lowers operating ratio in second quarter”, *Progressive Railroading Daily News*, www.progressiverailroading.com, July 20, 2006.

As stated above, the Sunset Route UP main line through Arizona includes the Gila Subdivision and parts of the Lordsburg and Yuma Subdivisions. Maximum track speeds are 79 mph passenger, 70 mph freight. Rail is predominantly 136 CWR, with sections of 132, 133 and 141 pound rail. 141 pound CWR is replacing the others. Train operations are governed by CTC.

UP has an intermodal facility in Tucson (at the former Pacific Fruit Express yards), with a capacity of less than 100,000 lifts per year.¹⁶ A national concrete-tie manufacturer has also built a new facility in the former PFE yards in order to provide ties for the Sunset Route double tracking project currently underway. Additionally, the presence of the new Port of Tucson rail switching service/Puerto Nuevo warehouse developments in southeast Tucson (Wilmot Siding at Kolb Road) may bring more rail freight and intermodal traffic to the area. The five-mile long spur that served Davis-Monthan Air Force Base from Wilmot siding was removed in 2004-2007 to make way for the new developments in the area. In the coming years, a new connection track at Nogales, second main track near the New Mexico border, and a second main track near the California border will be built.¹⁷ A new ethanol plant is being built in Casa Grande, which will be served by 100-car unit trains of grain. Lastly, Union Pacific is studying building a new hump-yard facility in the area near Red Rock, AZ and Picacho, AZ.

West of Willcox in the community of Cochise (MP 1063.9), Union Pacific provides daily coal train service to the Arizona Electric Power (AEPCO) Apache Station Generating Plant via a short 3-mile welded-rail spur owned by AEPCO. The plant is provided with a mix of New Mexico and Wyoming coal and owns a car mover as well as a vintage U.S. Army switch locomotive. At Bon (west of Casa Grande at MP 907.7), a dormant 2-mile rail spur served the ASARCO Sacaton Unit copper mine. The jointed rail spur is located entirely on the Gila River Indian Community and was served by the Southern Pacific Railroad from 1974 to 1984. The UP connecting switch at Bon has been removed. At Yuma, two spurs serve areas new Yuma Proving Grounds and Yuma Int'l Airport.

Phoenix Subdivision. The Phoenix Subdivision connects the Sunset Route with Phoenix and points west of Phoenix as far as MP 855.1, a few miles west of Arlington, and a total of approximately 125 miles of single track railroad. Rail on the Phoenix Sub is predominantly 113 pound bolted 113 pound CWR and 115 pound CWR. Other segments include 112 CWR, 119, 119 CWR, 132, 133 CWR and 136 CWR. Train control is automatic block system (ABS). Maximum track speed is 60 mph on this freight-only rail corridor. This line was originally built in 1887 and later expanded in 1923-1926 from the West Valley to the community of Wellton. Passenger service on the Phoenix Subdivision ceased in June 1996, and Amtrak's *Sunset Limited* train was rerouted to the Gila Subdivision (Yuma-Tucson) on the Sunset Route. UP currently interchanges with three railroads on its Phoenix Subdivision, Copper Basin Railway at Magma Junction, the dormant Magma Arizona Railroad at Magma Junction, and BNSF Railway at Phoenix (MP 906 of the Phoenix Sub).

¹⁶ "Intermodal Yards, 2005 Volumes", *TRAINS*, September 2006, pages 54-55.

¹⁷ "Union Pacific Railroad – Committed to Arizona", UP August 29, 2006, slide presentation.

The 19.6-mile Chandler Industrial Lead connects Dock, a railroad location seven miles into Pinal County, with the Phoenix Subdivision at McQueen, MP 923.6. The single track line is composed of various rail sections: 110, 110CWR, 112CWR, 113 and 113CWR. Maximum speed is ten mph on this unsignalled line. Year 2005 tonnage on the Chandler Industrial Lead was 0.31 million gross tons. This line was formerly a through route to Tucson via Santan and Poston, but was relegated to branch line status with a line change through Magma Junction in the mid-1960s.

The 9.5-mile Tempe Industrial Lead (Kyrene) connects an industrial park in West Chandler with the Phoenix Subdivision at MP 915.3. The unsignalled, single track line is 115 CWR and has a maximum speed of twenty mph. Year 2005 tonnage on the Tempe Industry Lead was 0.51 million gross tons. This line was originally built in 1886 as the Maricopa & Phoenix Railroad and was formerly a through route to Tucson via Maricopa, but was relegated to branch line status when 17 miles of track were removed in 1933. New sidings at Guadalupe Rd and Ray Rd were added to this line in 2006/07.

The UP Phoenix Yard (Harrison Street Yard), at MP 907 on the Phoenix Subdivision, lies between the 7th Street and 16th Street viaducts. South of the yard and adjacent to it are an intermodal facility and the UP Phoenix Auto Facility. The 4-mile long University Lead (South Phoenix), which diverges from the Phoenix Yard, was abandoned in 2007 due to low traffic volume. Two additional areas near the UPRR Campo Yard facility (MP 902) see daily freight service. The 3-mile Salt River(37th Ave) spur serves the lumber, scrap steel and chemical customers in South Phoenix, and the 2-mile long Cotpro spur serves the warehouse, coil steel, lumber and general merchandise market near I-10.

The 2.9-mile Litchfield Industrial Lead connects Litchfield Park and Litchfield Jct, the latter a railroad location near the intersection of Litchfield Road and Main Street, immediately east of the Phoenix Goodyear Airport. Litchfield Jct is at MP 888.3 of Phoenix Subdivision. The single track lead is composed of 90 pound rail and is unsignalled. Maximum track speed is twenty mph. Only one customer is currently served on this line. In 2006, the City of Goodyear announced Van Buren St. roadway improvements due to the widening of Interstate-10 overpass. The grade crossing was removed at the intersection of Van Buren St., with stipulation for the option to reinstall the crossing if there is need to allow rail access north under I-10 to McDowell Rd.

A 4.5-mile industrial lead built in 1979 connects Arizona Public Service's Palo Verde Nuclear Generating Station; the nation's largest, with the Phoenix Sub near Arlington Siding, MP 861.3. Since September 11, 2001 however, heightened security measures have deemed the rail connection unnecessary. Approximately one mile of the spur is still in service as far north as a locked gate and fence at West Elliot Road. The line is out-of-service from this point into the plant, and sections of rail have been removed and some of the right-of-way converted to ballasted access roads for security vehicles. Concrete barriers have been erected around the entire circumference of the plant's fence-line, sealing plant from the railroad spur. Palo Verde NGS's rail needs are provided with a transloading ramp near Elliot Road, where equipment can now be

trucked three miles north into the plant. UP's Buckeye Local provides service as needed to the transload facility at Elliot Rd.

Traffic on the Phoenix Subdivision averages about six through trains per day.¹⁸ The Phoenix Subdivision serves 147 customers.¹⁹ Local UP yards are operating near capacity.²⁰ Year 2005 tonnage on the Phoenix Subdivision was six million gross tons (cars, contents and locomotives).



UP Local at 107th Ave., Avondale, AZ.

There is an on-going UP program of capital improvements in the greater Phoenix area. Campo Yard was constructed in 2001-2002 and track was added in 2004. Two additional tracks were added in the Mesa Yard in 2004. Three additional tracks plus a trans-load track were installed in the Phoenix Yard in 2004. The Phoenix auto facility was expanded in 2005. In 2006 two additional tracks were added in a new south Tempe Yard located at Guadalupe Rd. In the same year, the Campo Yard industrial lead was improved. UP plans in 2007-2009 to construct new sidings on the Phoenix Subdivision,²¹ and it is also reported that UP is installing one mile of welded rail (CWR) and new ties at three curve locations between Mesa and Phoenix in summer 2007.²² Further, the Cities of Tempe and Phoenix are working with FRA and UPRR to establish a Quiet Zone designation throughout their cities in the coming years. Lastly, the Town of Queen Creek is building a new grade separation-underpass near Ellsworth and Rittenhouse Roads.

A private firm has proposed building an expanded cement manufacturing, distribution plant and terminal has also been near 99th Avenue/Buckeye Roads in Tolleson. Union Pacific has also discussed building a new classification yard on acreage it owns in west Buckeye in order to better serve West Valley customers, however no timetable has been released regarding that possibility.

Further west, approximately 26 miles of track, a point west of Buckeye, and east of Wellton, are out of service. A March 2007 field inspection reveals additional changes to the operating profile of the line. Due to recent activity by Union Pacific, the Roll Industrial Lead is now out of service only between Roll and Montezuma, mileposts 802.8 to 828, respectively. It is understood that UP has made no decision regarding the possible re-opening of this track, which re-opening would allow trains to travel over the former Picacho-Phoenix-Arlington-Wellton-Yuma route. This track, originally built in 1923-1926, was closed in 1996 due to low traffic volumes and high maintenance costs.

¹⁸ Phone conversation with UP official, October 27, 2006.

¹⁹ Pat Flannery, "Rail jam could slow Valley's economy", *The Arizona Republic*, May 31, 2005.

²⁰ *Ibid.* Also see Eric Beidel, "Pinal Rail Yard Running Into Opposition", *The Northwest Explorer*, November 17, 2006, in which UP spokesman Mark Davis is quoted as saying that UP yards in Phoenix and Tucson are at capacity.

²¹ "Union Pacific Railroad – Committed to Arizona", UP August 29, 2006, slide presentation.

²² ADOT e-mail, June 19, 2006.



UP Campo Yard transfer passes Phoenix Union Station.

Nogales Subdivision. The 65.7-mile single-tracked Nogales Subdivision connects Tucson with Nogales and there provides UP an entry into Mexico and an interchange with Mexican railroad Ferromex. Maximum speed is 40 mph. Rail is almost entirely continuous welded, including sections of 112, 113, 115, 119, 132 and 136. The line is unsignalled. Mine spurs on this line include ASARCO Mission Mine (MP 999.8) and Phelps Dodge Sierrita Mine (MP 1002.7). A six-track UP yard facilitates operations in Nogales. The line was originally built in 1910.

The border crossing at Nogales is an important international trade connection. Eight through trains per day utilize the crossing, and this traffic volume is expected to double by 2010. Traffic on the Nogales Sub could increase if a plan for a new container terminal at the Port of Guaymas, Mexico, is implemented. A container terminal would have to be built in order to affect this plan.²³

The 6.5-mile ASARCO (AS&R-Pima) Mission Mine spur connects the mine with the UP at Pima junction, MP 999.8 on the Nogales Subdivision. All rail is 113 pound continuous welded; maximum track speed is 20 mph; and the track is unsignalled. Maximum track gradient is 2.8 percent; maximum horizontal curvature is fifteen degrees. A Tucson-based UP local provides daily switching on this line. The ASARCO Mission Mine owns one car mover for incidental plant switching.

South of Pima Junction at Sahuarita Junction, MP 1002.4, two separate mining operations are served by a series of business tracks radiating from the Nogales Sub west of this junction. Both lines are amongst the oldest in Arizona, dating to the 1880s. First, Phelps Dodge Sahuarita facility (former Cyprus Anamax-Twin Buttes Mine) is served with a 7.5-mile rail line. The unsignalled track contains 115 CWR as well as 90 pound bolted, and maximum track speed is ten mph. Maximum gradient is three percent; maximum horizontal curvature is ten degrees. Although operations at the

²³ "Mexican Port Plans Box Terminal", *Traffic World*, June 19, 2006, page 41.

facility were suspended a few years ago due to a downturn in copper prices, traffic on the line has increased of late with salvage and maintenance operations as well as car storage.

Another business track, the former Cyprus Mine Spur, serves the Phelps Dodge Sierrita Mine (formerly Cyprus Sierrita Mine). The mine is located in the community of Green Valley. The Phelps Dodge Sierrita Mine spur is 9.8 miles in length, is composed of 113 and 119 pound CWR, has a maximum track speed of 25 mph and is unsignalled. Maximum gradient is 2.5 percent; maximum horizontal curvature is five degrees. Phelps Dodge Sierrita operates its own plant railroad and this is a sister operation to the Phelps Dodge Morenci Industrial Railroad (see Terminal/Industrial/Switching Railroads – Page 70).

Traffic on the Nogales Subdivision averages four round trip trains per day, plus two locals. Year 2005 tonnage was seven million gross tons (cars, contents and locomotives).

Clifton Subdivision. The 70.3-mile Clifton Subdivision connects Clifton, in Arizona, with the UP Sunset Route at Lordsburg, in New Mexico. 41.4 miles of the Subdivision are in Arizona. The single-tracked line is composed of a variety of rail sections: 75, 85, 90, 110, 110 CWR, 112, 113, 113 CWR, 115, 130, 132, 132 CWR and 136 CWR. Maximum track speed is 40 mph, but much of the line is restricted to 10, 20 and 30 mph. Maximum gradient is 2.06 percent. There are many horizontal curves, the maximum being 15 degrees 14 minutes. The six tunnels on the Subdivision are all in Arizona, near the Clifton end of the line. 268,000-pounds gross weight is the limit on UP's Clifton Sub.

UP provides once per week service, sometimes twice, hauling primarily copper cathodes to smelters as well as other copper products. An industrial lead owned by Phelps Dodge connects the Morenci Mine with UP at Clifton (see Terminal/Industrial/ Switching Railroads – Page 68). Year 2005 tonnage was 0.32 million gross tons (cars, contents and locomotives). Union Pacific has made public that this line may be a candidate for sale to a short line, but no decision has been made. This line is one of Arizona's first, originally built in 1884 and connected with Arizona's first narrow-gauge railroad, the Coronado Railroad.

Roll Industrial Lead. The Roll Industrial Lead is the western end of the UP track which formerly provided a through connection via Picacho-Magma-Mesa-Tempe-Phoenix-Buckeye-Arlington-Kofa-Roll-Wellton, which was used by Amtrak when Phoenix was a passenger stop until June 1996. In 1993, due to heavy flooding of the Gila River valley between Wellton and Roll, FEMA, Amtrak and ADOT operated emergency supplemental passenger train service in order to provide transportation to the communities. When floodwaters receded, the temporary passenger service ended.

The November 7, 2002, UP track chart shows the former through connection line as "out of service" between MP 855.1 (a point about four miles west of the Palo Verde

Nuclear Generating Station near Arlington) and MP 791.6 (a point about 21 miles east of Wellton). However, the March 7, 2004 timetable specifies that the Roll Industrial Lead is approximately 31 miles in length. Track is composed of the following rail sections: 112, 113, 113 CWR and 119. Maximum track speed is twenty mph. Train control is ABS. Maximum gradient is 0.5 degrees; maximum horizontal curvature is three degrees, eight minutes. Year 2005 tonnage on the Roll Industry Lead was less than one million gross tons. This line was originally built in 1923-1926. The twelve-span Gila River Bridge (MP 778-779) was built 1925 and is one of the longest railroad bridges in the state.

A March 2007 field inspection reveals additional changes to the operating profile of the line. Due to recent activity by Union Pacific, the Roll Industrial Lead is now out of service only between Roll and Montezuma, mileposts 802.8 to 828, respectively. Customers are served on the west end at the sidings of Roll (MP 780); Fertilzona (MP 782) and Growler (MP 793). One mile of surplus TTX COFC cars are stored near MP 794 on the west end, with End of Track red-flags staked at Kofa (MP 802.8. - end of Roll Block). On the east end near MP828 (Montezuma), a few miles of surplus cars are stored. An out-of-service ballast loading operation is mothballed at Hyder (MP 822.3).

In the community of Wellton (MP 770), McElhaney Cattle Company (MP 774.8) operates one of ten largest cattle-feed facilities in the USA. The facility, built in the 1950s, has over 130,000 head of cattle on-site consuming over 11,000 carloads of grain per year. Management explained that due to the high-volume nature of their business, the Union Pacific Railroad granted McElhaney trackage rights over 6 miles of the Roll Industrial Lead from the Wellton Jct derail at MP 771 to derail at MP 777. Using their single SW1200 locomotive for switching their grain silo lead tracks, McElhaney Cattle Company crews are also certified for FRA Class I operation and operate Union Pacific's trains over their granted authority. UP 100-car grain trains are delivered twice per week, with McElhaney crews taking over operation of trains from UP crews at Wellton. (See Terminal/Industrial/Switching Railroads – Page 67).

General Data. UP ships metallic ores (copper, silver, gold and zinc) from Arizona, and carries 10,000,000 tons of coal to power plants in Arizona.²⁴ Allowable gross weights, UP: Sunset Route and branch line through Phoenix to Buckeye, 315,000 pound gross weight cars; line south from Tempe, 286,000 pound gross weight cars; Lordsburg-Clifton, Tucson-Nogales and Chandler Branch, 268,000 pound gross weight cars.

UP Capital Plan. The UP has developed capital project priorities in its 2006 Capital Plan, which includes plans for more than \$2.7 billion on terminal and corridor improvements. It is perhaps understandable but nonetheless significant that these major improvements were made in UP's principal long-distance east-west corridors, including the Sunset Route corridor between Los Angeles and El Paso. Additionally, year 2006 terminal improvements were made at twelve locations system wide, three of these being in Arizona: Phoenix, Tucson and Yuma.²⁵

²⁴ www.uprr.com

²⁵ Union Pacific presentation at railroad conference in Houston, Texas, October 25, 2006.



UP Eastbound on the Sunset Route, Tucson, AZ.

Route-Miles	775 (main line and branch lines)
Annual Carloads	168,045 (originating or terminating in Arizona for 2006)
Commodities	Intermodal, automobiles, cement, coal, chemicals, lumber products, copper products, general merchandise.
Rail Weight	136 CWR, sections of 132, 133, 136 and 141 CWR 90, 112, 113, 115, 119 bolted / CWR on branchlines
Max. Track Speed	70 mph (79mph – Amtrak)

Short Line Railroads



Apache Railway Company (APA)

Initially constructed in 1917 by the Apache Timber Company and then extending over a much larger territory, today's Apache Railway Company (APA) is owned by Abitibi Bowater, a manufacturer of paper products. The present 38-mile main line connects a newsprint plant near Snowflake with the BNSF Transcon at Holbrook.

Year 2005 carloads totaled 11,422. APA operates five days per week, typically moving 55-car trains. The method of train control is Track Warrant Control (all train movements are governed by oral and/or written instructions issued by the dispatcher, often by radio).

Inbound traffic to the newsprint plant includes baled waste paper (4,019 carloads in 2005), coal (3,596 carloads), sodium hydroxide (69 carloads), hydrogen peroxide (55 carloads), sodium bisulfate (48 carloads), talc (16 carloads) and clay (1 carload). Outbound shipments are newsprint (1,471 carloads) and medium (brown paper used in the manufacturing of cardboard boxes) (549 carloads). Additional carloads include APA service to other customers with inbound animal feed (847 carloads), asphalt (346 carloads) and lumber (20 carloads), and outbound woodchips (363 carloads) and other miscellaneous traffic (21 carloads). One of APA's customers (inbound animal feed) anticipates a 150 percent increase in business over the next five years, which may require construction of one to one and a half miles of additional track plus two turnouts. APA appears to have an active program to increase its number of customers.

Track is maintained to FRA Class 3 standards and appears to be in excellent condition. Maximum train speed is 35 mph with event recorders, 29 mph without. Main line rail is 131 pound, jointed. Unusual among short line railroads, APA can handle 286,000

pounds gross weight railcars at 29-35 mph track speed, and also can handle 300,000-pound gross weight cars. This results from the relatively heavy weight of rail plus a disciplined and effective track maintenance program. APA operates six Alco locomotives with a seventh on loan to the Abitibi Bowater plant.

A seven-mile branch line links Snowflake with APA's main line, with service as needed.

As is the case with other Arizona railroads, flash flooding and washouts are an issue. APA has changed from cinders ballast to basalt, and states that this was a good move.

The ruling grade on APA is 1.8 percent.

There are fifteen grade crossings on this railroad. Developers have been seeking additional crossings; APA is concerned about this, but leaves decisions to the Arizona Corporation Commission.

Long term maintenance plans include replacement of rail, beginning on the curves.

There are no plans with regard to moving passengers or tourists on this line.

In January 2007, Apache Railway parent Abitibi Consolidated merged with Bowater Inc. to create the world's 8th largest paper/forest products company AbitibiBowater.

Key characteristics of APA are shown in the following table:

Route-Miles	45 (main line and branch line)
Annual Carloads	11,422
Commodities	Waste paper, coal, newsprint, animal feed, medium
Rail Weight	131 pound
Max. Track Speed	35 mph

Note: "Medium" is the brown paper inside (middle piece) cardboard.



Apache Railway power approaching company shops at Snowflake, AZ.

Historical Note:

The Apache Railway - Southwest Forest Industries – White Mountain Scenic Railroad

The Apache Railway together with sister road Southwest Forest Industries originally had a system of nearly 140 miles. The Apache Railway main line extended 72 miles from Holbrook south through Snowflake and Taylor to the logging community of McNary, Arizona. McNary was the corporate headquarters of Southwest Forest Industries and home to the McNary Sawmill. From McNary, Southwest Forest Industries constructed a 67-mile logging railroad through the Fort Apache Indian Reservation to Big Lake, and over the 9,100 foot passes of the White Mountains to the logging camp of Maverick.

In the early 1960s, a new paper mill was built about 10-miles west of Snowflake. This new primary customer allowed the Apache Railway to build a new line west to serve the mill. By the mid-1970s, the line change also enabled the Apache Railway to base its headquarters, locomotive shops, car shops and crew terminal adjacent to the paper mill.

Between 1964 and 1976, steam passenger rail service was provided between the town of McNary and Big Lake, AZ. by the privately owned-volunteer operation White Mountain Scenic Railroad. Passenger service had been available all the way through the breathtaking 9,100ft passes near Mt. Baldy to the logging camp of Maverick, but after the Apache Tribe withdrew timber cutting permission and non-tribal access on its lands, this service was cut back to Big Lake in 1967.

The White Mountain Scenic was further evicted in 1976 when all timber log-haul service was abandoned and the line was scrapped from Big Lake to McNary in 1976. In 1979, a major fire forced the closure of the McNary Sawmill, and the railroad was abandoned and scrapped between McNary and Snowflake by 1982.



The 9100ft elevation former Apache Railway/SWFI grade east of McNary, AZ. to Big Lake is now a popular hiking trail. Behind the trail sign, white snowdrift fences can be seen on the distant ridge.



Arizona & California Railroad (ARZC)

The Arizona & California Railroad (ARZC) is owned by RailAmerica and connects Matthie, Arizona (Milepost (MP) 0.0 on ARZC) (a railroad location 4.6 miles northwest of Wickenburg), which is on the BNSF Phoenix Line, and Cadiz, California (MP 190.4) (located west of Needles and east of Barstow, CA.). ARZC crosses the Arizona border at the Colorado River and Parker (MP 105.8), where ARZC office and shop facilities are located. Within Arizona, Parker Subdivision is 105.8 miles in length. The line was built between 1905 and 1907.

ARZC utilizes BNSF trackage rights between Matthie and Castle Hot Springs, a railroad location at MP 150.3, near Morristown. It is at this location that ARZC exchanges east and westbound trains with BNSF crews from Mobest Yard. ARZC retains trackage rights as per a 1991 agreement between Castle Hot Springs and Mobest Yard in downtown Phoenix, but rarely if ever uses the option.

Operating up to three trains per day, ARZC is primarily (95 to 99 percent) a carrier of BNSF bridge (through) traffic between Matthie and Cadiz. Within Arizona there are a few customers, including petroleum, chemical and bulk shipment customers near Parker.

ARZC carried 18,922 carloads in 2005. The historical traffic trend has been up; however, a reduction in carloads is expected in 2007 because of the relocation of a major customer, a cement manufacturer, which plans to relocate from Phoenix to another Arizona location. After that relocation, shipments for that customer are expected to resume.



BNSF-ARZC interchange trains near Morristown, AZ., while ADOT staff prepares to board for an inspection.

In 2007, it was announced that new alternative fuel-ethanol plant, dairy and livestock feedlot would be built in Vicksburg, Arizona. To serve this facility, a new transload, bulk grain facility and railroad loop will be built near Utting and Vicksburg sidings (MP 61.6). A BNSF Unit Grain train (110-cars with distributed power) is to operate once-per-week from the Midwest via BNSF Transcon to Williams Jct, then BNSF Phoenix Subdivision (Peavine) south to Matthie, AZ. From there, the BSNF would transfer the run though train to the Arizona & California Railroad for its eventual destination to the Vicksburg transload facility. This service is expected to begin by late 2008.

Principal commodities hauled by ARZC include cement, lumber, liquefied petroleum gas (LPG) and steel.

There are sidings at Aguila (MP 22.0), Love (MP 40.0), Salome (MP 50.0), Utting (MP 70.5), Bouse (MP 79.9) and Wall (MP 90.6).

The Parker Subdivision is not signaled; train control is by TWC.

Maximum track speed is 49 miles per hour (mph). Rail is 112 pound (per yard of single rail) continuous welded rail (CWR) over approximately 80 percent of the main line track on the Parker Subdivision; the remainder is 112-pound jointed (bolted) rail. Much of the line is tangent (straight) track; there are a number of curves at the pass, MP 54-58, including some seven-degree curves. The ruling (maximum) grade (gradient) in Arizona is 1.6 percent.



ARZC in vicinity of Aguila, AZ.

Right of way width is estimated at 100 feet.

ARZC can handle 286,000-pound gross weight railcars, the current interline standard on U.S. railroads.

An important issue is trespassers and illegal/undocumented immigrants, who sometimes climb aboard, and at times can be struck by, ARZC trains. When they board ARZC trains moving toward California, the ARZC crew notifies local authorities and stops the train at Parker so that the illegal passenger may be apprehended. This issue adversely affects train operations.

In spring 2007, Fortress Global Alternative Investment Inc. purchased ARZC's parent company Rail America.



ARZC train descending the grade at Harcuvar. West of Salome, AZ.

Key characteristics of ARZC are shown in the following table:

Route-Miles	106 (main line within Arizona)
Annual Carloads	18,922
Commodities	Cement, lumber, LPG and steel
Rail Weight	112 CWR
Max. Track Speed	49 mph



Arizona Central Railroad (AZCR) / Verde Canyon Railway
(Please see Chapter 4 for a description of the Verde Canyon Railway.)

The Arizona Central Railroad (AZCR) carries freight, operating between Drake (MP 0.0), its connection to the BNSF Phoenix Subdivision (which links Phoenix with the BNSF Transcon at Williams), and Clarkdale (MP 38.7). The Verde Canyon Railroad (VCRR), a tourist railroad operating passenger train round trips on the AZCR right of way between the depot at Clarkdale and MP 18.3, the Perkinsville siding, is described in Chapter 4. Both railroads are owned by The Western Group. The line was built in 1911-1912.

There are two freight customers, generating between 900 and 1,200 annual carloads. One freight customer – a cement plant -- receives inbound shipments of coal, coke, mill scale, and bauxite. Train frequency varies from zero to three or four 15-carload trains per week. It is possible that the cement plant may in the future move outbound cement by rail (the last such shipments occurred in the early 1990s). The other freight customer, a lumber company, ships relatively few carloads per year.

Yard limits apply to the entire railroad. Maximum track speed is 10-mph for freight and 15-mph passenger. The entire line is 90 pound rail. Ruling grade is two percent. There are numerous curves, up to 16 degrees. Before each passenger rail excursion, track is inspected by a hyrail vehicle. Right of way width is 100 feet. Maximum gross weight of railcars on this line is 238,000 pounds.



Through Truss Bridge MP 18.9

For some time, there have been reports of a new gypsum/cement plant to be built about a mile east of Drake on the Arizona Central Railroad. AZCR says that nothing has been decided regarding the venture.

The AZCR Roadmaster supervises maintenance of way crew of five. Their current plans are to continue the on-going every-year program of investing funds in tie replacement and other maintenance of the right of way and track infrastructure. Because of the relative remoteness of this railroad and because it is surrounded by National Forest lands, AZCR does not have the trespassing problems of other Arizona railroads.



Arizona Central Railroad grade and cut at MP 14.25, west of Perkinsville, AZ.

Key characteristics of AZCR are shown in the following table:

Route-Miles	38.7 main line (+2 miles of yard track)
Annual Carloads	900-1,200
Commodities	Coal, coke, mill scale, and bauxite
Rail Weight	90
Max. Track Speed	10 mph



Arizona Eastern Railway, Inc. (AZER)

The Arizona Eastern Railway (AZER) was described in the 2000 Arizona State Rail Plan Update as a single customer railroad, running 140 miles from the then Cyprus Mine and Smelter at Miami, in Gila County, to Bowie in Cochise County, which is the connection to UP. At that time, the railroad was described as having a maximum operating speed of ten mph, with 50 percent of the rail being less than 90-pound, and mostly 75-pound. Maximum gross car weight was 263,000 pounds. The line was built in 1910.

Recent information from AZER states that the railroad operates 103 miles of FRA Class 1 track (ten mph) and 32 miles of Class 2 track (25 mph), for a total of 135 miles. The railroad carried 7,310 carloads and 950,300 gross tons in 2005. The principal customer is the Phelps Dodge (formerly Cyprus) copper production facility at Miami, which is served by miles of industrial trackage within the plant. Other customers, at Safford, accept inbound kerosene and fertilizer.

Service level is one round trip per day, six or seven days a week. Commodities carried are copper ore concentrate, metallic copper, perlite, diesel fuel, kerosene and fertilizer. Average train length is 23 cars.

Timetable No. 5, June 2005, shows a maximum authorized speed of twenty mph. Yard Limits rules apply to the 135 miles of main track. Six axle locomotives and high/wide loads are prohibited. Maximum car weight is 263,000 pounds.

The AZER track consists of sections of 75, 80, 90, 110, 112, 113, 119, 131, 132 and 136 pound rail. Some segments are CWR. The majority of the rail is 75 pound.

Maximum horizontal gradient is 2.3 percent, near Globe. Maximum horizontal curvature is 16 degrees, also near Globe.

A siding at Calva, MP 1176, allows trains to pass. AZER maintains train crews at Safford and Miami; these crews swap trains at Calva.

Bridge repairs at MP 1181.1, Wild Horse Canyon Wash, indicate the intensity of occasional flooding. Here two railcars have been placed alongside the high north bridge abutment to stabilize it. It is clear that maintenance of Arizona railroads, perhaps generally favored by a relatively dry climate, is also subject to the destruction of periodic serious flooding.

The owner of the railroad is Permian Basin Railways, a subsidiary of Iowa Pacific Holdings L.L.C. Permian Basin's system-wide Central Car Repair Shop is also located in the Arizona Eastern Railway's Globe, AZ shops.

Width of right of way ranges between 100 and 400 feet; predominant width is 200 feet.

New Safford Mine Branch Line. The railroad plans a new branch at Safford, and will need RRIF (the federal Railroad Rehabilitation and Improvement Financing Program of loans and loan guarantees) funding assistance. AZER applied to the Surface Transportation Board, in August 2006, seeking approval to construct a ten-mile rail line to serve a new copper mine. Phelps Dodge is spending \$550 million to build the open-pit copper mine, near Safford, the first new U.S. copper mine in more than 30 years. The Safford Mine will be a zero-discharge facility and one of the most environmentally advanced copper mines ever built. The new rail line, which will be completed in 2008-2009, is to include a bridge across the Gila River and is estimated at \$22 million. A shuttle train will operate between the new mine and the Miami Smelter. Mine production is planned to begin in 2008. The line will boost AZER's traffic by about 4,000 carloads.²⁶

Main Line Upgrade Program. The railroad plans to upgrade all main line trackage to meet FRA Class 2 (25 mph freight) or Class 3 (40 mph freight) standards. AZER and Phelps Dodge are engaged in a program to replace 75 pound rail with 90 pound rail. Two miles have been completed and two additional miles of 90 pound rail have been purchased. In addition, AZER is moving forward with a tie replacement program. Between twenty and twenty-five thousand ties are being replaced this year, the second year of the program. At the end of five years, AZER plans to have FRA Class 3 or 4 tie standards. A surfacing program begins in 2006 and will be completed in 2007. By 2008 or 2010, the rail and tie program will have elevated the railroad to Class 2 and 3 speeds (versus mostly Class 1 speed at present).

The railroad also needs to perform a considerable amount of drainage and earth work along the right of way, upgrade its motive power fleet and upgrade the communication system. In addition to needing funding assistance to complete the Safford Branch, the

²⁶ Jeff Stagl, "Lining up new business", *Progressive Railroading*, September 2006, page 14.

railroad would like assistance maintaining state-mandated grade crossing protection systems. There are 128 grade crossings, 16 with active protection. There have been no crossing accidents since date of purchase in 2004. Before the railroad achieves Class 2 and 3 speeds, it will be appropriate to address grade crossing issues.

There is a need to upgrade bridges and track to meet FRA Class 2 standards (25 mph). Given the 135 bridges on the line, upgrade to 286,000 pound gross weight is not deemed practicable in the near future.

AZER utilizes two maintenance of way (MOW) crews, a total of 14 MOW employees.

AZER stated, in a visit to the railroad by the ADOT-consultant team preparing this study, that certain highway maintenance practices are having an adverse effect on AZER infrastructure. At the Klondike Road grade crossing about 15 miles north of Safford (at railroad MP 1152); a bent rail resulted from operation of county road maintenance graders on this gravel road. Like all gravel roads, this one must be shaped routinely to maintain a crown and permit drainage. Two graders were parked roadside, about 50 yards north of the crossing. The other issue raised by AZER is highway drainage problems affected AZER property. An example of this is two miles further north, at railroad MP 1154, where a highway culvert was partly filled with sediment that is undermining the railroad roadbed, just a few yards downstream from an AZER culvert. The area between the two culverts was considerably overgrown with three to four-foot-high vegetation, indicating a well-watered area. This is a place where improved highway drainage would result in improved railroad drainage. A grader had been utilized to scrape away some of the vegetation, but this is not deemed an effective fix. Cooperation between the railroad and ADOT/Gila County would be appropriate to resolve the railroad's drainage problem.



AZER northbound train at dusk, Safford, AZ.

Passenger Excursion Service. There was a trial run of the Copper Spike Railway passenger rail excursion service in spring 2006, between downtown Globe and the Apache Gold Casino (MP 1213.9) about eight miles to the east. A 1930 Motor Car named "Spike" was utilized in the trial run under the moniker "Copper Spike Railway".²⁷ It is understood that Globe wishes to re-institute the rail excursion service, but that AZER isn't interested unless the venture is at no cost to the railroad. A small passenger station has been constructed at the Casino at Highway 70. In spring-summer 2007, ADOT will study the probability of passenger rail service along the route as per request of the Historic Globe Main Street Program, the city, county, COG and Apache tribe.

²⁷ www.copperspike.com

The Arizona Eastern (Permian Basin Railways-Iowa Pacific Holdings) has made a bid to acquire the UP Clifton Branch. The two parties, plus Phelps Dodge (the sole shipper), are in discussions over that rail branch's future.



An eastbound AZER train at Soloman, AZ. the location of the future junction and 10-mile branch line to the new Phelps Dodge Safford Mine. The mine is located on the southern slope of the distant Gila Mountains.

Key characteristics of AZER are shown in the following table:

Route-Miles	135 (main line) and 5 + miles of smelter trackage
Annual Carloads	7,310
Commodities	copper ore concentrate, metallic copper, perlite, diesel fuel, kerosene and fertilizer
Rail Weight	75
Max. Track Speed	20 mph



Black Mesa & Lake Powell Railroad (BLKM)

The 2000 Arizona State Rail Plan Update states that the Black Mesa & Lake Powell Railroad “was constructed in 1972 to haul coal from a strip mine near Kayenta at Black Mesa to the Salt River Project Navajo Generating Station near Page, Arizona. When constructed, it was the world’s first 50,000-volt electric railroad”.²⁸

This single-purpose railroad, constructed at a cost of \$83 million²⁹, is isolated and is not connected with any other railroad or with the railroad system of the United States. The rail line is 78 miles in length.³⁰ The railroad reports that it moves 8.4 million tons of coal annually.³¹ There are three train trips daily, seven days a week, carrying approximately 8,000 tons of coal per trip. The plant provides power to four states.



An eastbound BLKM train near Cow Springs, AZ. Signs warn motorists of the 50,000 V. overhead power.

Rail is 115-119 pound CWR. A 6,000-foot siding midway permits passing of trains. Track is maintained at FRA Class 3 standards (40 mph). There are 32 public grade crossings, and six private crossings, four of which have active protection (flashing lights).³² Maintenance plans call for an eight year, 10,000 tie-per-year tie replacement

²⁸ 2000 Arizona State Rail Plan Update, page 69.

²⁹ “Black Mesa & Lake Powell Railroad” information sheet provided by the railroad, Nov. 17, 2006.

³⁰ *Ibid.*

³¹ Phone conversation with Black Mesa & Lake Powell Railroad official.

³² 2000 Arizona State Rail Plan Update, pages 69 and 71.

program. Maximum grade on the line is 2.3 percent. The company maintains a fleet of six electric E60C-2 locomotives, one diesel and 110-ton coal hoppers.

The Black Mesa & Lake Powell Railroad operates within the Navajo Indian Reservation in northeast Arizona. The right of way is fenced along its entire route.³³ The railroad is powered by electricity generated by the plant in Page.

Peabody Energy pays the Navajo Nation and Hopi Tribe, which jointly own Black Mesa coal, to operate the mine, which has coal reserves available to serve existing customers for decades.³⁴ Black Mesa coal is ranked as some of the cleanest-burning coal in the nation.



Key characteristics of BLKM are shown in the following table:

Route-Miles	78
Annual Carloads	84,000
Commodity	coal
Rail Weight	119
Max. Track Speed	40 mph

³³ "Black Mesa & Lake Powell", *The Southwest Railfan*, www.trainweb.org.

³⁴ "Hopi Tribe & Navajo Nation Earn Lease Bonus Payment", *Coal Age*, July 2006, page 8.



Copper Basin Railway (CBRY)

The Copper Basin Railway (CBRY) extends from its interchange point at Magma (MP 948.9) with Union Pacific (and Magma Arizona Railroad), 54.6 rail line route miles to Winkelman (MP 1003.5). A four-mile branch line, Ray Branch, connects the Ray Mine with the CBRY main line at Ray Jct (MP 987). At Hayden Junction (MP 999.3), a 1.8-mile smelter branch connects the main line with the ASARCO concentrator and smelter railroad. (See Terminal/Industrial/Switching Railroads – Page 65). Most CBRY traffic is between Ray Mine and the ASARCO smelter at Hayden. Over this route CBRY runs a scheduled operation, five or more loaded ore trains per day. Copper Basin Railway was incorporated in 1986 and took over operations of three separate Kennecott Copper and Southern Pacific Railroad branches. The lines were built between 1903 and 1924.

The railroad is owned by ASARCO LLC, a Tucson-based integrated copper mining, smelting and refining company. ASARCO announced on September 28, 2006, that it purchased 100 percent of the outstanding shares of Copper Basin Railway, Inc.³⁵

At Hayden (MP 1002.25), CBRY connects with another short line railroad, the dormant San Manuel Arizona Railroad, and serves as that railroad's sole connection with Union Pacific and destinations on the general railroad system of the United States.

Major commodities carried include copper ore, concentrates, anodes, cathodes, coal, coke, CSO (smelting bi-product corrosive), lumber products (building material), military vehicles, petroleum naphtha, plastic resins and sulfuric acid. CBRY's principal customers are ASARCO (representing 95 percent plus of CBRY traffic), San Manuel

³⁵ ASARCO press release, September 28, 2006.

Arizona Railroad/BHP (before that railroad ceased operations in 2006), a lumber dealer and a plastics manufacturer.

There are about 14 trains per day, with an average train length of 3,600 feet.

Recent-year carloads summary:

<u>Year</u>	<u>Carloads</u>
2000	20,567
2001	21,982
2002	19,466
2003	14,245
2004	15,182
2005	13,040



CBRY copper ore gondola at Hayden Jct.

The decline in carloads is attributed to the 1999 shut down of the BHP operation at San Manuel, and the 2005 ASARCO labor dispute and strike. CBRY is optimistic regarding the future, given the recent-year increases in the price of copper, and is actively looking for additional customers.

The 2000 Arizona State Rail Plan Update reports a tonnage of just over three million generated by CBRY in 1998 between Ray Branch and Union Pacific at Magma Junction, and several times that tonnage generated between Ray Mines and Hayden smelter. In August 2006, CBRY reports that current tonnage on the line is approximately fourteen million annually.

Train control is by Direct Traffic Control (DTC). Maximum track speed is 25 mph (FRA Class 2 track). Rail is a combination of CWR and bolted; rail weights include 136, 132, 113, 112, 110, and 90 pound sections. With the exception of a short segment of 90-pound rail at MP 987, all rail on main line track is 110 pound and above. There are three tunnels on the main line. Maximum grade on the main line is 1.78 percent; there is a 2.2 percent grade descending from Hayden smelter to Hayden, on the smelter branch. Maximum track horizontal curvature on the main line is 12 degrees 5 minutes. Maximum track speed between MP 950.5 (Magma Junction yard) and MP 971.6 is 25 mph, then ten mph to MP 987 (Ray Junction), then 25 mph to MP 999.3 (Hayden). Ray Branch is ten mph track.

Maximum loaded railcar weight is 286,000 pounds; thus CBRY is one of those short line railroads capable of carrying the current maximum interline standard. However, the railroad states that multiple areas of infrastructure improvement still need to be addressed. Areas requiring funding include bridge rehabilitation, tunnel expansion (widening, to improve clearances), and replacement of smaller rail sections (lighter weight rail). Approximately \$1.5 million dollars are needed to complete track and bridge upgrades to continue to accommodate 286,000-pound railcars and improve road grade

crossings. CBRY plans to continue a track and bridge maintenance program, and also is considering acquisition of newer, more fuel-efficient locomotives. The last public funding support was in 1995, the last year in which the federal Local Rail Freight Assistance (LRFA) Program was funded by Congress.

Width of right of way varies between 50, 100 and 200 feet.

At Tilbury crossing (MP993) in Kearny, local authorities widened the crossing ostensibly with Arizona Corporation Commission approval, but without replacing and modernizing the outdated crossing protection system (gates, lights). New grade crossings were also allowed from Florence to Magma Jct. for new home developments. CBRY is concerned with accidents, safety and liability and had filed these issues with the A.C.C. in 2006.

The CBRY right of way runs for some miles along the Gila River, providing spectacular scenery but also resulting in drainage problems which consume considerable maintenance of way resources, not to mention occasional serious flooding.

Trespassers on four-wheel-drive vehicles wear away ballast shoulders, and also pose a safety problem when motorized trespassers choose to drive on the track way, through tunnels and over bridges.



CBRY hyrail maintenance-of-way inspection along the Gila River.

In addition to part of its operation being a scheduled railroad, there are other CBRY features which identify it as a non-typical short line railroad: a very well-maintained track infrastructure which includes relatively heavy rail (only one short 90-pound-rail segment on the main haul lines, the remainder being 112, 113, 132 and 136 pound rail including some continuous welded rail (CWR)); a 25 mph maximum track speed; and 286,000-pound-gross-weight-railcar capability. In addition CBRY runs an eminently safe railroad, and morale and pride are high and evident.

There is no passenger service on this railroad; however, community interest has been expressed in both excursion service and future commuter rail service. The *General Plan Update*³⁶ adopted in 2003 by the Town of Florence, located on the CBRY, shows proposed excursion service between Florence and Kearny through the scenic Gila River Canyon, as well as future commuter rail service between the Florence area and metropolitan Phoenix, utilizing rights of way of the CBRY, and, beyond Magma Junction, UP. In addition, CBRY is a stakeholder in the ongoing Maricopa Association of Governments Commuter Rail Strategic Plan, which may identify the Magma Junction-Florence corridor as a possible candidate for service.



CBRY's northbound, empty ore train returns to the Ray Mine.

Key characteristics of CBRY are shown in the following table:

Route-Miles	54.6 (main line) (6 miles - branches)
Annual Carloads	13,040
Commodities	Acid, concentrate, copper, CSO
Rail Weight	110
Max. Track Speed	25 mph

³⁶ Town of Florence, *Florence Area General Plan Update*, 2003, Figure C-6.

Grand Canyon Railway (GCRX)

(Please see Chapter 4 for a description of the Grand Canyon Railway.)





Magma Arizona Railroad (MAA)

Owned by BHP-Billiton, Magma Arizona Railroad (MAA) is a 28-mile line connected on its west end with Union Pacific Railroad and Copper Basin Railway at Magma Junction. At its east end is the BHP Superior Mine, a copper mine closed in 1995. A local perlite company also shipped products via MAA prior to the mine's closure. Inasmuch as the mine is the only present customer, this line has been placed in a care and maintenance status, but has not been abandoned. The line was built in 1915.

Maximum track speed is fifteen mph. It is expected that MAA may be active again. If the Resolution Copper Company-Rio Tinto shaft mine east of Superior is re-opened, it is anticipated that there will be adequate traffic to justify resumption of railroad operations. However, no final decision has been made regarding this venture.

There are no plans to operate passenger/tourist trains in the near future, public grade crossings will be maintained, there are no plans to request public funding, and Resolution Copper Company states that it will respond as appropriate to Homeland Security requirements. A portion of Magma Arizona Railroad from Magma Jct to Florence Jct; (approx 12 miles) is considered a possible candidate for inclusion into the regional commuter system plan currently being developed by Maricopa Association of Governments. Due to the increasing population in western Pinal County, this segment of the line may be studied by MAG.

Key characteristics of MAA are shown in the following table:

Route-Miles	28 (main line)
Annual Carloads	Not in service
Commodities	Not in service
Rail Weight	Not provided
Max. Track Speed	15 mph



San Manuel Arizona Railroad (SMA)

The 2000 Arizona State Rail Plan Update says that this BHP Billiton (BHP) SMARRCO property extends from the connection with CBRY at Hayden (near Winkelman) to a smelter at San Manuel, and that traffic associated with smelter operations was the only traffic on the line. The year 2000 Rail Plan Update also states that the 29-mile main line track was maintained to FRA Class 3 standards (40 mph) and would carry 286,000-pound railcars. The line was built in 1953.

From 1988 to 1999, the San Manuel Smelter had the distinction of being the largest and most technologically advanced smelter in the world. Due to a decline in copper prices and global demand, the San Manuel smelter was shut down between 1999 and 2002 and then dismantled in 2004. Before the San Manuel mine was closed, rail service was seven-days-a-week on the seven-mile line between mine and smelter. The mine line was also built in 1953. The 136 CWR on that seven-mile line was removed in 2005. A number of observers have commented on the unfortunate ups and downs of the copper industry (related to wide fluctuations in the price of copper) which apparently resulted in the decision to shut down the BHP Billiton operation at San Manuel.

The 29-mile mainline railroad ceased operations as of July 31, 2006, but there are no abandonment plans. The present owner, BHP Billiton, has decided to leave the track in place. BHP Billiton is considering ways of allowing freight operations to continue on the line. A sole shipper, at the time of the cessation of operations, was averaging three cars a month (inbound plastic pellets). Currently, that shipper is trans-loading via truck from the CBRY terminal at Hayden. BHP states that future freight business on the SMA is under consideration. Four EMD locomotives remained on the property as of fall 2006.

The July 2006 timetable states that maximum track speed on the San Manuel Arizona Railroad (SMA, also SMARRCO) is now twenty mph. Railroad length is 29.4 miles between Hayden Junction Yard (MP 0) and San Manuel Yard (MP 29.4).

Rail is 90 pound jointed. Maximum grade is two percent. Quartz is the ballast of choice, although slag has been used. The right of way has a well-maintained appearance. The BHP Billiton official responsible for right of way maintenance has been with this railroad since 1984.

BHP Billiton has maintained track to FRA Class 2 standards. SMA runs roughly parallel with the San Pedro River, at a higher elevation with respect to the valley floor as compared with CBRY. SMA does not have the drainage problems of CBRY.

SMA stated that trespassers on all terrain vehicles ride on and wear down the ballast shoulders. This problem is shared with CBRY and other Arizona railroads.

SMA expressed strong preference for steel or concrete culverts rather than timber structures, to bridge relatively smaller streams, because of the much-reduced maintenance requirements in the case of steel and concrete.

SMA has no other access to the general railroad system of the U.S. except through CBRY.

There are no plans to operate passenger/tourist trains. Public grade crossings will be maintained. There are no plans to request public funding. BHP states that it will respond as appropriate to Homeland Security requirements.



SMA engine and acid cars parked near the San Manuel, AZ. shop.

Key characteristics of SMA are shown in the following table:

Route-Miles	29.4 (main line)
Annual Carloads	Inactive
Commodities	Inactive
Rail Weight	90 pound
Max. Track Speed	20 mph



San Pedro & Southwestern Railroad (SPSR)

With regard to the San Pedro & Southwestern Railroad (SPSR), the 2000 Arizona State Rail Plan Update reported that its predecessor railroad, San Pedro & Southwestern Railway (SWKR), had daily operations over the 65 miles of main line track between Benson and Bisbee Junction. Nearly thirty miles of the track lies within the federally protected San Pedro River Riparian Area. The line was originally built in 1888 and was sold to Kyle Railways in June 1992 by the Southern Pacific Railroad.

Today, the San Pedro & Southwestern is a 7.5 mile railroad.

Traffic generated 1.6 million gross tons in 1998. Commodities carried included coal, fertilizer components, produce and copper plate. There were plans for a new rail re-connection to Mexico at Naco, and increased traffic volumes. The SWKR interchanged with UP at Benson, and extended to the Mexican border near both Naco and Douglas. The 10 miles of track between Paul Spur (east of Naco) and the city of Douglas had been abandoned and removed by the late 1990s due to lack of traffic.

From the mid-1990s until 2002, SWKR owners attempted to negotiate with the States of Arizona and Sonora, Ferromex railroad, Union Pacific, the US Department of Commerce and other officials in their goal of re-establishing a cross-border railroad connection at Naco. The last rail connections at Naco and Douglas had been removed by Southern Pacific in 1972 and the early 1990s, respectively. In the interim, the San Pedro & Southwestern Railway initiated a transload operation at Bisbee Junction, with

copper products being transported via truck from northern Sonora mines in Nocozi and Cananea to a rail car loading facility at Bisbee Junction. The rail cars were then moved north and interchanged with the UP at Benson. A downturn in copper in the early 2000s ended this transload agreement, and the notion of using the SWKR as a “bridge line” for Union Pacific’s Mexican traffic never came to fruition. The SWKR was placed up for sale by 2002.

The Arizona Rail Group is the current owner of the San Pedro & Southwestern Railroad (new AAR reporting marks – SPSR), which was acquired from RailAmerica in 2003.

In 2003-2005, Arizona Rail Group management reattempted to establish a new railroad crossing from Naco, Arizona, to Naco, Sonora. Their goal was to allow congested UP and Ferromex traffic through Nogales to instead use the SPSR line as a “reliever bridge line” between Sonora and Arizona. Unfortunately, the same roadblocks that scuttled the prior attempts at this venture again stymied Arizona Rail Group’s efforts. Neither the State of Arizona, the State of Sonora, the US Department of Commerce, Union Pacific nor Ferromex was willing to establish Naco, Arizona/Naco, Sonora as a re-connected rail port, so the venture was terminated.



**San Pedro & Southwestern trackage near Fairbank, AZ.
This nearly 57-mile section was abandoned in removed in spring 2007.**

In summary, recent-year declining fortunes of the SPSR perhaps began when the copper smelter at Douglas was closed in 1987 and dismantled in 1989. New business opportunities were lost when negotiations with Mexico, Arizona and private interests, to establish a railroad border crossing at Naco, broke down. Finally, the Federal Railroad Administration determined in early 2005 that the railroad must be embargoed between Curtiss (SPSR MP 7.5) and end of track at Paul Spur (SPSR MP 64.1) unless certain bridges between Curtiss Siding and Naco were repaired.

As only one customer remained between Curtiss and Paul Spur (east of Naco and Bisbee Junction), shipping inbound coal a few times per month, the traffic on that portion of the railroad was insufficient to justify the cost of repair and maintenance. STB abandonment action ensued.

By 2006, the San Pedro Railroad Operating Company, LLC, a component of the Arizona Rail Group, applied to the U.S. Surface Transportation Board (STB) to abandon approximately 76.2 miles of railroad line in Cochise County including 70.6 miles of track between Curtiss and Douglas, and the 5.6-mile Bisbee Branch.³⁷ Freight service will continue on a seven-mile section between Benson and Curtiss, where the Apache Nitrogen plant is located.³⁸

On February 13, 2006, Sonora-Arizona International LLC filed an Offer of Financial Assistance with the STB to purchase the line. In April the STB set the purchase price at \$5,632,644.³⁹ However, on July 12, 2006, Sonora-Arizona International LLC withdrew its Offer of Financial Assistance, and the next day the San Pedro Railroad Operating Company, LLC, requested that the STB authorize abandonment of the 76.2 miles of railroad without further delay.

The Federal Government, the State of Arizona, its transportation, commerce and trade departments, county and local governments were all notified one year in advance by the SPSR of this pending abandonment. The railroad actively sought state, county and local financial participation in order to save what may be a “vital international trade corridor” in the future. However, due to unavailable funding, state, county or local governments declined to participate in purchasing or preserving the active rail corridor between Benson and Naco.

On July 20, 2006, the San Pedro Railroad Operating Company stated its willingness to enter into trail use negotiations previously requested by the Trust for Public Land under section 8(d) of the National Trails System Act, 16 U.S.C. 1247(d)(Trails Act). If an agreement for interim trail use/rail banking is reached by January 22, 2007, interim trail use may be implemented. If no agreement is reached, the San Pedro Railroad Operating Company may fully abandon the 76.2 miles of railroad right of way.⁴⁰ Further, the Center for Biological Diversity and Friends of the San Pedro River has been at the forefront of protecting the San Pedro River Riparian Preserve area by advocating the removal of the railroad, thus reverting the land back to its original pre-1888 profile.

As of fall 2006, the SPSR had sold the track assets between Curtiss (MP1040.15) to Paul Spur (MP1097.3) near Douglas; and the rail was removed in spring 2007. It is reported that some of this old rail will be used to rebuild the 19-mile Virginia & Truckee Railway between Virginia City and Carson City, NV. Sale of track assets will allow a

³⁷ Surface Transportation Board Decision, STB Docket No. AB-1081X, Service Date February 3, 2006.

³⁸ Michael Sullivan, “San Pedro and Southwestern Railroad line may become a park”, *Sierra Vista Herald/Bisbee Review*, December 21, 2005.

³⁹ Surface Transportation Board Decision, STB Docket No. AB-1081X, Service Date May 3, 2006.

⁴⁰ Surface Transportation Board Decision, Docket Number AB 1081 0 X, Service Date July 26, 2006.

one-half million dollar upgrade (3,000 new ties, 3000 tons of new ballast and other improvements) on the seven-mile Benson-Curtiss line, permitting 20 mph track speed, and raising of the line to 286,000-pound gross weight railcar capability. This upgrade constitutes SPSR's capital investment program. After this front-loaded investment, maintenance requirements should be relatively modest for several years.

SPSR track is jointed rail including the following weights: 110, 113, 119, and 132 pounds per yard.

SPSR's present sole customer, at Curtiss, produces ammonium nitrate, and generates approximately 1,350 annual carloads (inbound anhydrous ammonia, outbound fertilizer) for SPSR. SPSR maintains one locomotive at the plant to provide switching as needed, as well as interchange with the SPSR main line train at Curtiss Yard.



SPSR power switching industries at Curtiss, AZ.

SPSR provides three-days-per-week service to its customer at Curtiss and states that it will respond to customer needs: "We do whatever it takes."

The right of way (ROW) between Benson and Douglas is owned by SPSR except for a 20-mile segment in the riparian area which is owned by UP. Overall ROW width is generally 200 feet. As is the case with other railroads, SPSR has an ATV (all terrain vehicles) problem. A company employee says, "We put signs up and they pull them down. When we see them, we tell them to get off the property. We've upgraded our cell phones with cameras so we can photograph them."

Like other Arizona short line railroads, SPSR intends to replace its smaller timber bridges with culverts, to reduce maintenance costs. The present seven-mile SPSR includes three grade crossings, two public and one private.

With regard to transportation of hazardous materials (hazmat) and transportation security, SPSR says, "We're like hawks." The U.S. Transportation Security Administration visits to check voluntary compliance with hazmat transportation and security standards.

San Pedro & Southwestern Railroad Timetable No. 10, effective November 1, 2003, shows a maximum authorized track speed of twenty mph, imposes Yard Limits between MP 0 (Benson Yard) and MP 67.9 (Forrest), that is, over the entire "main line". Yard Limits are stated in the timetable as meaning that trains or engines are authorized to use main track without protection against other trains or engines. Engines must give way as soon as possible to trains as they approach. All movement within yard limits must be at restricted speed, meaning a speed that allows stopping within half the range of vision. Further, the Timetable designates MP 47.2 (between Hereford and Naco) to MP 67.9 (Forrest) as excepted track, and imposes the rules on excepted track that maximum speed is ten mph, no revenue passenger train is to be operated, and no train will be operated containing more than five cars placarded according to hazardous material regulations. Maximum gross weight of car and locomotive, between Benson and Forrest, is 263,000 pounds. It is understood that a new timetable is being prepared to reflect the new 7.5 mile profile of the railroad.

The SPSR organization also performs a satellite switching operation at Willcox, Arizona. The two customers, outbound grain and inbound fertilizer, produce approximately 150 annual carloads. An EMD GP locomotive is presently used in Willcox, but will be exchanged for newer power in 2007.

SPSR actively seeks new customers at both locations. In particular, a team track trans-load operation is planned at Benson Yard. With these two properties, Arizona Rail Group has stated that this furthers their goal to become a premier industrial railroad switching operation throughout Arizona. In 2007, two of its locomotives at Benson and its switcher for Willcox will be repainted with SPSR's new livery. The additional switch engine located in the plant property at Curtiss will also be replaced with new power in later this year.

Illegal immigrants have been an issue on the SPSR line south of Benson; timber trestle bridges were utilized as fuel for warming fires. But a greater problem has been activities of the federal border patrol, which has landed helicopters and moved four-wheel-drive vehicles onto SPSR track, and left them there, without regard to active rail operations.

As of February 2007, the Trust For Public Land (TPL) filed a Notice for Interim Trail Use (Rail Banking – Held in Reserve) for 38.4 miles of track (this includes all of San Pedro & Southwestern Railroad's right of way within the San Pedro River Riparian Preserve).

This group is working with local communities, governments and other preservation and environmental groups for the purchase of the right-of-way and establishment of a multi-use nature, recreational and interpretive trail through the Riparian Preserve.

Due to the removal of the track south of Curtiss and the SPSR's primary focus on freight rail, there are no plans to operate passenger/tourist trains on the line. However, predecessor owner SWKR operated passenger service known as the "Grey Hawk" between Benson and Charleston Siding in 1995-2000. The railroad promoted train travel along the scenic and previously inaccessible San Pedro River Riparian Area.

Key characteristics of SPSR are shown in the following table:

Route-Miles	7.5 (main line)
Annual Carloads	1,350
Commodities	anhydrous ammonia, fertilizer
Rail Weight	110-132
Max. Track Speed	20 mph



RL Banks & Associates consultants join SPSR's Roadmaster during a hybrid inspection to the end-of-track at MP 7.5 south of Curtiss, AZ. The trackage south of this point was removed in spring 2007.



Tucson, Cornelia and Gila Bend Railroad Company (TCG)

The 2000 Arizona State Rail Plan Update describes the Tucson, Cornelia and Gila Bend Railroad Company (TCG) as a subsidiary of Phelps Dodge, constructed primarily of 70 and 90 pound rail, embargoed for 16 years (since 1984), with a primary function of transporting copper products from the Phelps Dodge Ajo Mine. The 2000 Rail Plan Update also describes the wye and marshalling yard adjacent to UP tracks at Gila Bend, and states that Local Rail Freight Assistance (LRFA) federal funding was utilized in 1982 and 1983 to rehabilitate a number of the railroad's bridges.⁴¹ The line was originally built in 1916 and this line has been placed in a care and maintenance status

TCG's accompanying Phelps Dodge New Cornelia Mine railroad trackage, served the terraced New Cornelia pit before mining extraction operations were converted to a system of conveyor belts. This track was gradually removed from the pit between the mid 1970s and 1997.

The 43-mile TCG railroad, which connects with UP at Gila Bend, remains out of service; however, the infrastructure remains in place. The line was re-opened by Phelps Dodge in 1995 and 1996 so that scrap resulting from the dismantled smelter could be shipped out. In 1996 Phelps Dodge announced a plan to re-open the mine, but by 1997 the price of copper dropped and plans were tabled. It is understood that an industrial firm has inquired with Phelps Dodge regarding building a factory one mile south of Gila Bend near the TCG right-of-way and Interstate 8.

In June of 2005, the vintage 1909 TCG wood boxcar #203 was donated along with flatcar #304 to the Southern Arizona Transportation. In summer 2006, Phelps Dodge

⁴¹ 2000 Arizona State Rail Plan Update, pages 78-81.

also donated its vintage Tucson, Cornelia & Gila Bend Railroad wooden caboose to the Arizona Railway Museum in Chandler, Arizona.

In early 2007, the former TCG Ajo and New Cornelia Mine locomotive and car shops were dismantled and the removal of the remaining fleet of four vintage GP-30 and NW locomotives and freight cars were being handled through assets disposition.

On March 19, 2007, Phelps Dodge merged with mineral corporation Freeport McMoRan to form the world's largest copper, gold and minerals company. Freeport McMoRan will relocate from New Orleans to Phoenix, and the Phelps Dodge name will remain on all copper mining operations.



TCG Ajo yard has been dormant since 1997. Ajo, AZ.'s historic passenger depot(r).

Key characteristics of TCG Railroad are shown in the following table:

Route-Miles	43.3 (main line)
Annual Carloads	Inactive
Commodities	Inactive
Rail Weight	70, 90
Max. Track Speed	Inactive

Terminal / Industrial / Switching Railroads



APS Cholla Power Plant (APSX)

Arizona Public Service operates the APS Cholla Power Plant railroad at Joseph City, Arizona. The railroad consists of nearly 7 miles of loop, yard and spur trackage and is located north of the BNSF Transcon. The industrial railroad's purpose is to cycle coal trains through the APS Cholla Power Plant, which provides electricity to Arizona and customers in the Pacific Northwest. The line was built in 1974 along with the plant.

APS contracts with BNSF Railway, which operates daily coal service of 80-97 car trains. The coal is brought from a number of mines, including McKinley Mine (New Mexico), Lee Ranch (New Mexico) and Spring Creek Mine (Wyoming). The APS Railroad will usually shuttle 30-car cuts of coal into the plant at a time, with empties being returned to the BNSF yard. Fly ash is also routinely shipped out.

In addition, the industrial railroad owns three remote-controlled locomotives for switching, which are maintained in an onsite shop. Approximately 14 of the APS plant's employees work with or for the railroad operations, maintenance and coal management. This is a "yard limits" operation. Any locomotive or trains must be able to stop within one-half of sight distance and follow other pertinent yard limits rules. The plant has one private crossing with cross-bucks and stop signs. The plant and property are highly secure, with 24-hour patrols, fencing and surveillance. Future improvements call for expanding the siding to accommodate 128 car trains, in addition to upgrading to 136 pound welded rail.

Key characteristics of the APS Cholla rail operation are shown in the following table:

Miles of Track	7
Annual Carloads	33,000
Commodity	Coal, ash
Rail Weight	119-136
Max. Track Speed	Yard limits



ASARCO Hayden Smelter (ASTX)

ASARCO operates the Hayden Smelter industrial railroad to serve its smelter located in Hayden, Arizona. The railroad consists of over two miles of yard, spur and loop trackage and is connected to the national railroad network by sister ASARCO-owned railroad, the Copper Basin Railway. CBRY provides on-call switching via its 1.8-mile lead from Hayden Junction. The line was built in 1910 along with the smelter.

The railroad owns five small locomotives, nicknamed “donkeys” for plant, mill and smelter switching. These are maintained onsite.

ASARCO plant employees provide railroad operations and maintenance.

This is a “yard limits” operation. Any locomotive or trains must be able to stop within one-half of sight distance and follow other pertinent yard limits rules.

The plant has one private crossing with cross bucks and stop signs.

The plant and property are highly secure, with 24-hour patrols, fencing and surveillance.

Key characteristics of the ASARCO Hayden Smelter rail operation are shown in the following table:

Miles of Track	2.5
Annual Carloads	6,000
Commodity	Copper concentrate and products
Rail Weight	75-119
Max. Track Speed	Yard limits



Camp Navajo Railroad (DODX / USAX / USNX)

The Camp Navajo Railroad, owned by the Arizona National Guard, is a 38-track-mile network entirely within the 28,000-acre State of Arizona military reservation at Bellemont. The rail network exists to move military loads to and from the numerous storage igloos on the reservation. Train movements are on an “as required” basis. The Camp Navajo Railroad connects with the BNSF Transcon (transcontinental main line, connecting southern California and Chicago), and moves about 40 carloads per year. The line was built in 1942 along with the then-named Navajo Ordinance Depot. Camp

Navajo is a heavily secured and patrolled military installation.

Not all of the 38 miles of unsignalled track are currently in service. Track speed is ten mph. Most rail is 80, 85 and 90 pound, and there is some 131 pound. The rail shows little wear. There are no plans to remove any rail lines. Maintenance of way (MOW) (maintenance of all railroad infrastructure on the right of way) and train operations are funded by the U.S. Navy and Camp Navajo (Arizona National Guard). An equipment maintenance section is housed in a locomotive shop which is utilized to service Camp Navajo’s three locomotives. The operating and maintenance staff includes three licensed locomotive engineers, seven brakemen-conductors and two MOW staff. Camp Navajo plans to lease its “200 area” known as Volunteer Mountain Industrial Park, which is adjacent to the BNSF main line, for commercial rail yard use.

Key characteristics of the Camp Navajo rail network are shown in the following table:

Miles of Track	38
Annual Carloads	40
Commodity	Military loads
Rail Weight	80, 85 and 90
Max. Track Speed	10 mph



McElhaney Cattle Company (N/A)

In the community of Wellton (MP 770), McElhaney Cattle Company (MP 774.8) operates one of ten largest cattle-feed facilities in the USA. The facility, built in the 1950s, has over 130,000 head of cattle on-site consuming over 11,000 carloads of grain per year. Management explained that due to the high-volume nature of their business, the Union Pacific Railroad granted McElhaney trackage rights over 6 miles of the Roll Industrial Lead from the Wellton Jct derail at MP 771 to derail at MP 777. Using their single SW1200 locomotive for switching their grain silo tracks, McElhaney Cattle Company crews are certified for FRA Class I operation and operate Union Pacific's trains over their granted authority. UPRR 100-car grain trains are delivered twice per week, with McElhaney crews taking over operation of trains from UP crews at Wellton. (See Union Pacific Railroad – Page 26)

Key characteristics of the McElhaney Cattle Company rail operation trackage rights over the Union Pacific Railroad are shown in the following table:

Miles of Track	6 (UP trackage rights)
Annual Carloads	11,000
Commodity	Feed, feed products
Rail Weight	112, 119, 113-CWR (UPRR)
Max. Track Speed	Yard limits



Phelps Dodge Morenci Mine Industrial Railroad (PDOX)

Phelps Dodge states that its Morenci Mine is North America's leading producer of copper. The first shovel of rock from Morenci's first pit was scooped out in 1937. More than 700,000 tons of rock is moved each day. The 2,000 employees work around the clock, five days a week, producing about 840 million pounds of copper each year. The line was built in 1923 and approximately 15 miles of track are currently utilized.

Formerly there was a smelter at the Morenci Mine, but smelter operations there ceased in 1984. Phelps Dodge operates a smelter at Miami and ships copper concentrate by rail and truck to Miami. At the Morenci Mine, Phelps Dodge uses the electrolytic process to produce cathode copper.

Load limit is 263,000 pounds gross weight per railcar on Morenci Mine track; UP will allow up to 268,000 pounds on its Clifton Sub. It was stated that the absence of 286,000 pound railcar gross weight capability does not pose a problem. Maximum gradient on the track between Morenci and Clifton Yard is four percent.

Conventional four-axle locomotives (GP-38s) handle the tonnage loads on Morenci's fifteen miles of track, despite gradients up to five percent and horizontal curves up to 20 degrees. Rail is 90 pound and 133 pound, jointed, 39-foot sections. There are nine operable locomotives, and two additional are stored serviceable. Phelps Dodge owns two ballast cars and eight old-model air-activated side dumps. These cars are used to backfill washouts. Phelps Dodge Sierrita operates its own plant railroad and is a sister operation to the Phelps Dodge Morenci Industrial Railroad.

This is a “yard limits” operation. Any locomotive or trains must be able to stop within one-half of sight distance and follow other pertinent yard limits rules.

The Morenci Mine rail operations connect with Union Pacific Railroad at Clifton, where PD utilizes trackage rights. UP owns the yard at Clifton and provides service once or twice a week, depending on volume. The principal issue is delivery of Morenci Mine product to rod mills in Connecticut, Illinois and Texas. UP service is said to be very inconsistent.

On March 19, 2007, Phelps Dodge merged with mineral corporation Freeport McMoRan to form the world’s largest copper, gold and minerals company. Freeport McMoRan will relocate from New Orleans to Phoenix, and the Phelps Dodge name will remain on all copper mining operations.



Phelps Dodge Morenci trains utilize Union Pacific trackage rights in the Clifton, AZ. Yard. PD’s power passes Clifton’s historic passenger depot (left).

Key characteristics of Morenci Mine rail operation are shown in the following table

Miles of Track	15
Annual Carloads	Not provided
Commodities	Copper concentrate, copper, acid
Rail Weight	90, 133
Max. Track Speed	Yard limits



Phelps Dodge Sierrita Mine Industrial Railroad (PDOX)

This mine operation and railroad are located in Green Valley, Arizona. The railroad operates two diesel locomotives, one conventional four-axle locomotive (GP-38) and one vintage switch engine nicknamed "Old Blue". Both handle the copper products loads on Sierrita's two miles of track. Rail is 90 pound and 110 pound, jointed, 39-foot sections. The line was built in 1957.

Sierrita Mine Industrial Railroad interchanges with UP just east of the plant in a series of sidings at the top of a 2.5 percent grade. The connecting line which interchanges with this Sierrita Mine railroad is known as Union Pacific's Phelps Dodge Sierrita Mine spur. That line begins west of Sahuarita junction at MP 1005.4, where it splits southwest to serve the Phelps Dodge Sierrita Mine (formerly Cyprus Sierrita Mine). (Please see UP profile for additional details.)

This is a "yard limits" operation. Any locomotive or trains must be able to stop within one-half of sight distance and follow other pertinent yard limits rules. Phelps Dodge Sierrita operates its own plant railroad and is a sister operation to the Phelps Dodge Morenci Industrial Railroad. On March 19, 2007, Phelps Dodge merged with mineral corporation Freeport McMoRan to form the world's largest copper, gold and minerals company. Freeport McMoRan will relocate from New Orleans to Phoenix, and the Phelps Dodge name will remain on all copper mining operations.

Key characteristics of Sierrita Industrial rail operation are shown in the following table:

Miles of Track	2 (yard trackage)
Annual Carloads	Not provided
Commodities	Copper concentrate, copper, acid
Rail Weight	90, 110
Max. Track Speed	Yard limits



Port of Tucson (N/A)

Port of Tucson is located in east Tucson near Union Pacific's Wilmot Siding (Kolb Road). Port of Tucson is a privately funded 600 acre freight transload facility and Foreign Trade Zone (FTZ) bonded warehouse district (FTZ 174, site 2). The switching service and warehouse district, which specializes in container/intermodal transloading, frozen storage, beer and utility pipe, originally opened in 2001 to service the growing NAFTA and CANAMEX corridor markets.

The railroad has six employees and operates three GP30 and GP35 diesel locomotives. Rail is 90, 110, 119 pound bolted in 39-foot sections. The railroad has an annual carload volume of 9,000-10,000 cars per year, with a capacity of 150-300 cars at a time. Two container lift cranes are on-site and currently four customers are served.

In 2007, Port of Tucson is expanding east of Kolb Road and is building a new one-mile long switching lead parallel and north of Union Pacific Sunset line. Additional spur tracks are being constructed to serve a new warehouse and intermodal ramp. The ramp will begin handling 50 car-unit flatcar pipe-trains in 2007. As a part of this expansion, Port of Tucson spent \$500,000 on Kolb Road overpass improvements in order to build the third parallel lead track under the overpass.

Key characteristics of the Port of Tucson rail operation are shown in the following table:

Miles of Track	5 (yard trackage)
Annual Carloads	10,000
Commodities	Container/intermodal-transload, frozen storage, beer, utility pipe. Foreign Trade Zone bonded warehouse (FTZ 174, site 2),
Rail Weight	90, 110, 119
Max. Track Speed	Yard limits

Proposed Railroads

The Southwest Gateway

Proposed Yuma, AZ. to Port of Punta Colonet, Baja California, Mexico Railroad Line

The phenomenal expansion of global trade results in increased transportation volumes through ports, with most U.S. ports constrained and surrounded by metropolitan growth. Thus Mexico is seen as an opportunity for new ports of entry, with regard to container shipments, for example, from Asia.

Mexico's Secretariat of Communications and Transport has authorized construction of a sea port at Punta Colonet (south of Ensenada), on the Mexican coast about 120 miles south of San Diego, California. Mexican railroad company Ferromex has announced its intention to bid for construction of a railroad linking Punta Colonet with Mexicali, state capital of Baja California, located near the California border.⁴² The line would then proceed east to the Colorado River, where it would cross into Arizona and eventually connect to the UP Sunset Line near Yuma. Initial traffic on the new line is estimated to consist of 3-6 trains per day between Punta Colonet and Yuma. This traffic is projected to translate into container traffic of 1 million TEU's (twenty foot equivalent units) annually by 2012, with over 5 million TEU's by 2020.

It is understood that three entities, including BNSF and UP, are also bidding on the right to access the new port in Mexico.

Union Pacific has authorized an agent to negotiate options on land in Yuma County, for construction of a new railroad through the county, in order to link that railroad with the prospective Mexican port.⁴³ Federal, state, county and local officials are also working together with the local communities on this venture, although no final decision has been made and no inauguration date for service has been set.

Salt River Project - Fence Lake Mine Extension

In 2001, the Salt River Project proposed building of a new 40 mile coal line that would connect its Coronado Generating Station (BNSF Coronado Subdivision) in St. Johns, Arizona, with the new Fence Lake coal mine located on the Zuni Pueblo in western New Mexico. BNSF Railway would provide rail service over the new line. However, after protests by the Zuni Tribe with regard to water, land and sacred grounds issues near Fence Lake, in addition to other environmental concerns from other groups and citizens, plans were suspended and dropped in 2005. In lieu of a new mine, in 2005 the Salt River Project was able to coordinate an agreement for a new coal contract from Wyoming's Powder River Basin.

⁴² "It's a Go for Port Colonet", *Logistics Today*, October 2006, page 9.

⁴³ Cary Blake, "Rail Plan Threatens Yuma's Citrus Region", *Western Farm Press*, October 25, 2006.

Figure 4 - Abandoned Railroads of Arizona (1950 – 2007)



San Pedro & Southwestern Railroad trackage near Naco, AZ (Bisbee Jct.) in fall 2006. This track was abandoned and removed in spring 2007 after years of repeated, but failed attempts to create an international rail crossing-trade zone with neighboring Naco, Sonora, Mexico.

San Pedro & Southwestern Railroad (SPSR) (2006-2007)

Curtiss-Fairbank-Lewis Springs-Naco-Bisbee Jct.-Paul Spur

San Manuel Arizona (SMA) (2005-2006)

Mine-San Manuel Smelter Line

Union Pacific Railroad / United States Air Force (2004-2007)

Davis-Monthan Air Force Base spur (East Tucson-Wilmot)

San Pedro & Southwestern Railroad (SWKR) (1995-1999)

Bisbee Jct-Warren-Corta-Bisbee; Paul Spur-Calumet-Douglas.

Phelps Dodge - New Cornelia Mine terraced mine trackage (1975-1997)

Ajo

Atchison Topeka & Santa Fe Railway (ATSF) (1983-1992)

Prescott- Entro-Chino Valley-Paulden-Abra

Apache Railway / Southwest Forest Industries (1982)

Snowflake-Taylor-Shumway-Pinetop Lakes-McNary

Southern Pacific Railroad (SPRR) (1979)

Lewis Springs-Sierra Vista/Ft. Huachuca



San Manuel Arizona mine line in 1993. The mine and smelter ceased operations in 1999 and this 7-mile section of track was removed in 2005.

Southwest Forest Industries / White Mountain Scenic Railroad (1976)
McNary-Apache Sunrise Ski Resort area-Big Lake

Atchison Topeka & Santa Fe Railway (ATSF) (1974)
Entro-Prescott Valley-Dewey-Humboldt-Iron King

Southern Pacific Railroad (SPRR) (1974)
Waltz-Gadsden-San Luis (International Boundary)

Southwest Forest Industries (1967)
Flagstaff-Mountaineer-Newman Park-Mormon Lake

Southwest Forest Industries / White Mountain Scenic Railroad (1967)
Big Lake - Maverick, AZ.

Southern Pacific Railroad (SPRR) (1964)
Santan-Olberg-Poston

Atchison Topeka & Santa Fe Railway (ATSF) (1962)
Prescott-Iron Springs-Skull Valley

Atchison Topeka & Santa Fe Railway (ATSF) (1962)
Paulden-Abra Line Change

Southern Pacific Railroad (SPRR) (1962)
Fairbank-Sonoita-Patagonia

Southern Pacific Railroad (1962)
Fenner-Sibyl Line Change



Santa Fe Railway's Prescott, AZ. Branch at Entro (Point Of Rocks) near Granite Dells. Inactive since a September 1983 flood, many attempts to restore service to Prescott did not succeed and the line was removed in spring 1992.

Southern Pacific Railroad (SPRR) (1961-1964)
Douglas-Apache-New Mexico State Line

Southern Pacific Railroad (SPRR) (1961-1962)
Mescal-Benson Junction

Southern Pacific Railroad (1960)
Mohawk Summit Line Change

Southern Pacific Railroad (SPRR) (1960)
Fairbank-Tombstone

Atchison Topeka & Santa Fe Railway (ATSF) (1960-1961)
Crookton-Pineveta-Ash Fork – Crookton Cutoff

Atchison Topeka & Santa Fe Railway (ATSF) (1960-1961)
Supai-McLellan-Johnson Canyon Tunnel-Welch – Crookton Cutoff

Southern Pacific Railroad (1959)
Bosque Line Change

Atchison Topeka & Santa Fe Railway (ATSF) (1958)
Iron King-Blue Bell-Mayer

Southern Pacific Railroad (1952)
Davis-Monthan Air Force Base line-change at East Tucson (Wilmot).

Chapter 2

GIS Map Database

Purpose

This chapter describes the process by which a GIS map database of the freight railroad network was developed.

Creating the Rail GIS Database

At the kick-off meeting for the Statewide Railroad Inventory and Assessment Project, the project team identified the rail line attributes that would be included in the Rail GIS Database and, therefore, available for display on maps created from the database.

Two basic types of data were identified. Line data are information that can be associated with a specific rail line segment, based on beginning and ending milepost locations, such as the length or ownership of a segment. Point data are information associated with a particular point or geographic location on a line, such as a station or bridge.

Lima & Associates and ADOT GIS staff conferred to determine the most desirable approach for developing the database. The consensus was that a “dynamic segmentation” approach was preferred and would give ADOT or Lima the greatest flexibility in making subsequent corrections or additions to the database. The dynamic segmentation approach has the ability to link sets of different types of attributes to any portion of a linear feature, referred to in GIS terminology as a “route”, using relational database technology. The inherent linear nature of rail lines made this approach a natural fit. Note that GIS “routes” are not to be confused with railroad routes. Rather, GIS routes in nearly all cases are portions of rail routes or lines.

The creation of the Railroad GIS Database involved a number of steps, each of which is summarized below.

Assignment of GIS Routes

The primary sources of data for the database were linear track charts provided by the railroads. These charts are schematic diagrams of different subdivisions and branch lines of the railroads, incorporating special displays of features along each rail line, identified by milepost.

The consultant analyzed the track charts and identified subdivisions -- or segments of subdivisions -- suitable for designation as GIS “routes.” Route numbers were then assigned to each of these line segments.

Culling and Entering Data

For each designated GIS route, point data were culled from the appropriate railroad track chart as follows: Bridges were identified by milepost location and bridge type, and stations were identified by milepost location, station type -- yard, siding, depot, etc. -- and station name. The data was then entered into an Excel spreadsheet by GIS route number and milepost. After entering, the data was double-checked for accuracy by another consultant staff member and errors and omissions corrected as needed. The database attributes and data types are listed in Table 1.

Table 1. Rail GIS Database Attributes

Database Attribute	Data Type
AAR classification	Line
FRA track class	Line
Ownership	Line
Service status (active, abandoned)	Line
Railroad subdivision	Line
Train type	Line
Shared track facilities	Line
Future forecast traffic levels	Line
Annual ton-miles	Line
Length	Line
Bridges	Point
Stations	Point
Siding	Point
Bad-order siding	Point
Siding – 2 main tracks	Point
Cross-over	Point
Junction	Point
Yard	Point
Intermodal yard	Point
Automobile ramp	Point
Depot	Point
Turn Table	Point
Roundhouse	Point
Maintenance facility	Point
Transfer table	Point

Creation of the GIS Route System

Line data were entered into separate Excel workbooks, using the GIS route number, beginning and ending segment mileposts, and a code representative of each specific data description:

Next, look-up tables were created in Excel for each of the attributes to be used as identifiers for each of the representative data description codes. A spreadsheet was also created that listed each route and route segment by beginning and ending milepost based on each route's track chart. This spreadsheet was used as the information chart in creating the route system.

The route system was then created in the GIS application by use of linear referencing based on the original railroad map data provided by ADOT, and the actual railroad track mileposts were used as the measures for the routes. The GIS route system was subsequently calibrated -- or checked and adjusted for accuracy -- by comparing the locations of mileposts as placed by the system with their known locations on the ground.

The point data and line data tables were saved as individual database files and imported into the geodatabase along with their corresponding look-up tables.

Maps were created using the geodatabase and an electronic copy of the geodatabase was sent to the project manager for evaluation.



A birds-eye view of the Colorado River from BNSF Railway's double-track bridge at Topock, AZ. To the north are the mountains of Nevada, with the desert marshes near Needles, CA. to the west.

Chapter 3

Grade Crossing Improvements

Purpose

This chapter reviews the status and needs of Arizona grade crossing improvements.

The Arizona Grade Crossing Safety Program

The Section 130 federal program, administered by ADOT's Utility and Railroad Engineering Section (U&RR), provides funds for grade crossing safety improvements at public crossings.

ADOT's Motor Vehicle Division, Traffic Records Section, maintains an inventory of all statewide crossings. Each year ADOT selects approximately 20 to 30 crossings for field inspection. Selection of crossings for the Diagnostic Tour (on-site field inspection) is based upon the Relative Priority Index, which takes into account inputs including road traffic volume, railroad traffic, speeds, annual average daily traffic (AADT), existing traffic warning devices, sight distance and buses and trucks carrying hazardous materials.

This selection includes consideration of the Arizona Corporation Commission (ACC) and local government recommendations. The rail-grade crossing inspections are performed by a Diagnostic Team comprised of officials from ADOT, ACC, Federal Highway Administration (FHWA), the concerned railroad, and the agency having jurisdiction over the public road. The team recommends improvements and estimates their cost. ADOT, ACC and FHWA make a final selection of projects, based upon available funding. The projects are included in the Statewide Transportation Improvement Program (STIP), which goes to FHWA for approval. U&RR monitors project development with the ACC, the railroad and the sponsoring agency.

Recent and Potential Improvements

A recent improvement, on crossings with active protection devices such as gates and flashing lights, is the inclusion in the local control cabinet of remote terminal units -- monitoring and cellular telemetry -- by which a signal is sent to a Class I railroad when crossing warning devices are not functioning properly. Another on-going improvement is the changing of incandescent lights to light-emitting diodes (LED).

Further, ADOT's internal processes have been streamlined over the years in the turnaround time required, for example, in developing Intergovernmental Agreements (IGAs) and in preparing environmental clearances.

A process that would benefit from further improvement is for the railroads to inform ADOT and ACC of construction start and of completion within two weeks after construction is completed. The inspection could be performed, and if the work is acceptable, the completion letter could be sent to FHWA before the final bill is received by U&RR.

In general, ADOT would appreciate a more simplified grade crossing safety improvement program, one entailing less paperwork and less bureaucracy.

Also, federal funding falls far short of demand, specifically for grade crossing improvements and grade separations. ADOT received \$1.4 million in fiscal year 2005, which allocation was increased recently to \$2 million, in order to fund new ADOT safety positions and programs in the Traffic Department.

Railroads are enthusiastic partners when ADOT and the Federal Government subsidize the improvements and mitigation. The higher the financial burden to the railroad, the longer it takes for railroad coordination and project completion. It usually requires three to five years to resolve most grade crossing issues, as it can take the concerned railroad up to one year to compile a cost estimate. It can require upwards of one to three years to obtain IGAs with the municipalities, or to obtain similar agreements for improvements and mitigation.

ADOT, in coordination with the Federal Railroad Administration, Federal Transit Administration, Arizona Corporation Commission and Operation Lifesaver, are currently working on the first Arizona State Rail Safety Plan for release in 2007. This plan will incorporate a coordinated statewide policy and action plan based on much of details identified in this chapter.

Conclusions

Arizona has an organized, functioning grade crossing safety program. Improvements are being considered and effected. Additional improvements may require changes at the federal level. Faster action by railroads and municipalities are encouraged.



Chapter 4

Passenger Rail Services

Purpose

This chapter outlines Arizona's current passenger rail services and 5-year horizon, including Amtrak, tourist railroads and current planned light rail programs that may interface with existing railroad corridors.

Overview of Passenger Rail Services

Arizona's current passenger rail services include scheduled intercity passenger service operated by the National Railroad Passenger Corporation (Amtrak) and two tourist railroads, the Grand Canyon Railway and the Verde Canyon Railroad. Also, a light rail transit system is currently being constructed in Phoenix, Tempe and Mesa. A modern streetcar system is also being planned for Tucson. Within Arizona, there has been active planning with regard to potential high speed rail, additional intercity passenger rail service, commuter rail, light rail transit and new tourist rail operations. Amtrak service in Arizona began on May 1, 1971.

Intercity Passenger Rail Service

Amtrak (National Railroad Passenger Corporation) (AMTK / AMTZ)



Two long-distance National Railroad Passenger Corporation (Amtrak) routes cross Arizona. On the BNSF Transcon (Chicago-Los Angeles), the *Southwest Chief* provides daily service to Winslow, Flagstaff, Williams Junction and Kingman. On the Union Pacific Railroad Sunset Route (El Paso-Los Angeles), the *Texas Eagle/Sunset Limited* provides three-days-a-week service to Benson, Tucson, Maricopa and Yuma. Westbound in Arizona, *Texas Eagle/Sunset Limited* operates one train, terminating in Los Angeles. Eastbound, *Texas Eagle/Sunset Limited* operates one train within Arizona, but *Texas Eagle* service separates in San Antonio, Texas, and connects San Antonio with Chicago,

Illinois. The eastbound *Sunset Limited* connects San Antonio with Orlando, Florida. However, Hurricane Katrina damage resulted in Amtrak originating and terminating the *Sunset Limited* in New Orleans “until a date to be announced.”⁴⁴

Amtrak’s *Southwest Chief* provides bus connections between Flagstaff and Phoenix.

The following table shows fiscal year 2006 Amtrak station ridership figures for Arizona.

City	Ridership
Benson	833
Flagstaff	34,634
Kingman	10,663
Maricopa	4,837
Tucson	10,965
Winslow	3,413
Williams Junction	7,114
Yuma	2,295
Arizona Boardings	74,754

Source: Amtrak

Amtrak on-time performance has been a significant issue. With regard to Amtrak stations in Arizona, on-time performance – considering percentage of trains arriving within 60 minutes of scheduled time – ranges from 22 to 84 percent, with the majority of the delays being attributed to the host railroad (as opposed to Amtrak). The within-60-minutes on-time performance has been better on the BNSF Transcon (63 to 84 percent) than it has been on the UP Sunset Route (22 to 46 percent).

Amtrak is conducting a condition assessment of each station, including an evaluation of compliance with the Americans with Disabilities Act; the results are expected in 2007.

The National Railroad Passenger Corporation (Amtrak) is an operating for-profit railroad created by the Rail Passenger Service Act of 1970. Until revoked in 1997, Amtrak retained a legal monopoly in the provision of intercity rail passenger transportation over the routes that it served. Freight railroads are required to grant Amtrak right of access to freight railroad tracks, and to give dispatching priority to Amtrak trains. Amtrak is required to pay for that access on an incremental cost basis (as opposed to full cost).⁴⁵ (These are three advantages which commuter railroads do not enjoy; commuter railroads must negotiate their access, priority and costs with the host freight railroad.)

⁴⁴ Amtrak System Timetable, Spring-Fall 2006, page 96.

⁴⁵ Incremental cost may be generally defined as that which is greater than the freight railroad would pay for operation and maintenance of the corridor for movement of its freight traffic. For example, if Amtrak requires that passenger train speeds be at a higher level than that for which the freight railroad normally maintains the track structure, Amtrak pays the difference.

The mandate given Amtrak by Congress to operate a nationwide passenger rail service has endured a tortuous and difficult three and a half decades. One thorny issue has been the troublesome relationship of Amtrak with the freight railroads over which Amtrak is authorized by law to operate, in particular with regard to on-time performance.⁴⁶ Another issue is the notion that intercity passenger rail service should operate at a profit, notwithstanding the fact that all transportation modes but freight rail are subsidized, and that virtually no intercity passenger service in the world operates at a profit. Finally, Congress has not funded Amtrak generously. At one point in 2002, Amtrak announced “unprecedented service reductions if Congress did not fully fund its budget request.”⁴⁷

No specific changes in Amtrak service have been announced, despite the fact that long-distance Amtrak service in particular has come under significant scrutiny. The newly-appointed (September 2006) president and chief executive of Amtrak, Alexander Kummant, said he does not plan to dismantle Amtrak’s national network of long-distance trains, but will consider some changes.⁴⁸ In a dramatic shift from recent years, Congressional leadership has advocated a new bill that will fund Amtrak’s capital needs with approximately \$19 billion over the next six years.

A recent Amtrak news release reports the highest annual ticket revenue ever achieved, as well as increased ridership over the previous fiscal year (Amtrak’s fiscal year is October through September). Comparing fiscal year 2006 with 2005, the *Southwest Chief* gained 1.7 percent more riders and 9.7 percent in ticket revenue. *Texas Eagle* and *Sunset Limited* declined, respectively, 2.8 and 36.2 percent, in ridership. *Texas Eagle* ticket revenue gained 5.4 percent, while the *Sunset Limited* lost 43.7 percent.⁴⁹ The steep *Sunset Limited* declines are attributable to truncated *Sunset Limited* service following Hurricane Katrina.

Amtrak *Sunset Limited* previously provided passenger service to the Phoenix metropolitan area (Coolidge, Tempe, and Phoenix) via the Phoenix Line, until June 1996. Passenger service had been provided continuously since March 1927 by Southern Pacific and Amtrak. In 1996, due to insufficient traffic and growing maintenance costs, Southern Pacific Railroad closed 63 miles of track, roughly between Arlington and Roll, Amtrak’s *Sunset Limited* was rerouted over the Gila Subdivision (part of the *Sunset Route* through Maricopa), where it remains to this day.

It is understood that UP has made no decision regarding the possible re-opening of the west end (Arlington-Kofa-Roll) of the Phoenix “West Line” as a through route to Yuma. There is no decision on whether or not Amtrak would be rerouted back through Phoenix should this line reopen.

⁴⁶ It must be noted, however, that Amtrak, in addition to the freight railroads, is responsible for a share of its late arrivals.

⁴⁷ “Modern Passenger Trains: A National Necessity”, *National Association of Railroad Passengers*, June 2002, page 10.

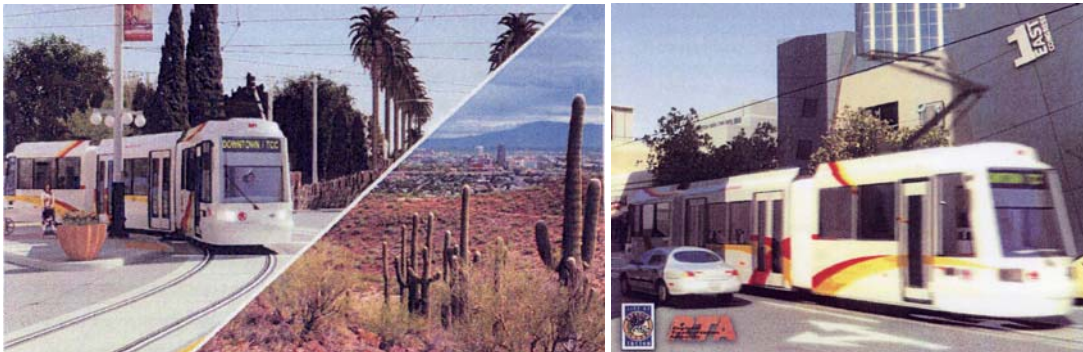
⁴⁸ Daniel Machalaba, “Amtrak Is Switching Tracks”, *The Wall Street Journal*, November 3, 2006, page B4.

⁴⁹ Amtrak News Release, “Amtrak Ticket Revenue Tops \$1.37 Billion Setting a New Record”, October 26, 2006.

Light Rail Transit



METRO's (Valley Metro) light rail transit system was approved by voters in 2000 and is currently under construction. The Minimum Operating Segment project alignment, twenty miles in length and serving Phoenix, Tempe and Mesa, is scheduled to open in December 2008. Future light rail corridors, totaling nearly sixty miles are planned, with additional line section openings throughout the Valley in 2012, 2015, 2017, 2019 and 2025. This rail transit system does not connect to the general railroad system of the United States, as do most other railroads described in this report.



In 2006, Tucson voters approved a regional transportation plan which includes a 4-mile long Modern Streetcar line from University Medical Center, across the University of Arizona and through downtown to Tucson Origins Heritage Park (slated for the west bank of the Santa Cruz River). Old Pueblo Trolley vintage trolley cars may also utilize this line. The Tucson Modern Streetcar is scheduled to open in late 2010. The Tucson line will not be connected with the general railroad system of the United States, however a multimodal transit station connection will be available near Tucson's Amtrak depot.

Tourist Railroads



Grand Canyon Railway (GCRX)

The Grand Canyon Railway, with a ridership of 240,000 in 2006, is among the most popular tourist railroads in the United States, operating on 64 route-miles between depots at Williams and the National Park Service hotel facilities on the South Rim of the Grand Canyon. The line was originally built in 1901.

The railroad was purchased from what was then the Atchison, Topeka and Santa Fe Railway Company (ATSF) by Max and Thelma Biegert in January 1989. (ATSF had discontinued daily rail passenger service on the line in July 1968.) Passenger rail service was reestablished on the line on September 17, 1989.⁵⁰ In 2006 the owners put the railroad up for sale, and Xanterra Parks & Resorts, a nationwide park-management company, submitted a letter of intent to buy the railroad. On January 26, 2007 the owners accepted the Xanterra buyout offer⁵¹ and the National Park Service approved the transaction.

Between Memorial Day and Labor Day there are two round trips daily, starting from Williams. A second train can be added during off-peak season whenever demand calls for it. The rest of the year sees one daily round trip. With growing demand, additional trips are planned. This is a passenger only operation; no freight is carried.

This railroad has two active steam locomotives and nine vintage Alco-MLW and EMD diesel locomotives. Current maximum train length is four power units plus 16 passenger cars. All equipment is serviced at the Williams shops, one of the few remaining steam locomotive maintenance facilities in the U.S. The Williams shops perform extensive rehabilitation of passenger equipment, plus work for other parties.

⁵⁰ "Grand Canyon Railway owners ready to ride off into the sunset, consider sale", *Progressive Railroading Daily News*, April 6, 2006, www.progressiverailroading.com.

⁵¹ "Deal to Buy Historic Grand Canyon Railway Accepted", *The Arizona Daily Sun*, January 26, 2007.

Track speed is 40 mph. Rail is 90 and 115 pound, bolted. Train control is TWC. Wyes at both ends of the line allow turning of trains. The Grand Canyon Railway is connected to BNSF at Williams.

In 2007, longtime Grand Canyon Railway 2-8-0 steam locomotive #18 (ex-LS&I) will be retired and sold to a new owner along with #20, its sister engine. #18 was the first locomotive purchased by the railroad in 1989 and has the honor of pulling the very first passenger train to the Canyon on September 17, 1989, eighty-eight years to the day after the first passenger train reached the Canyon. In their place, Grand Canyon Railway has purchased 2-8-2 #539 (ex-Spokane, Portland and Seattle/ex-Northern Pacific). This larger Mikado steam engine will join the Railway's current active stable of 2-8-2 #4960 (ex-CB&Q) and 2-8-0 #29 (ex-LS&I) in 2007.



Southbound Grand Canyon Ry passenger train nears Miller Wash, with Arizona's tallest mountains, the 12,600ft San Francisco Peaks in the distance.

A GCRX Passenger Car at the South Rim's Grand Canyon, AZ. depot. The historic El Tovar Harvey House hotel (above left) greets passengers prior to their first glimpse of the Grand Canyon.



Key characteristics of the Grand Canyon Ry operation are shown in the following table:

Route-Miles	64 main line (1 mile of yard trackage)
Annual Passengers	240,000
Commodities	Passengers only
Rail Weight	90-115
Max. Track Speed	40 mph



Verde Canyon Railroad (AZCR)

The Verde Canyon Railroad is a tourist railroad, operating passenger train round trips on the Arizona Central Railroad (AZCR) right of way, between the depot at Clarkdale (MP 38.7) and MP 18.3, the Perkinsville siding. The tourist railroad's principal attraction is the scenic Verde River Canyon. The line was originally built in 1912.

The railroad was purchased from what was then the Atchison, Topeka and Santa Fe Railway Company (ATSF) by Dave Durbano, CEO of the Western Group, in the late 1980s. (ATSF discontinued daily mixed-rail passenger service on the line in the early 1950s.) Since 1990, passenger trains have become the focal point of operations, and the tourist operation attracts about 90,000 riders annually. In 2006, the Verde Canyon Railroad carried its one millionth passenger. There are six tourist trains per week. Two vintage EMD FP7 locomotives pull up to 16 cars on the four-hour round trip.



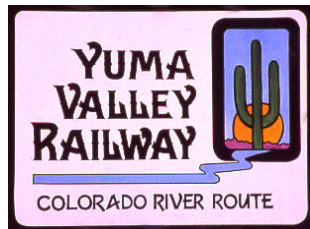
Verde Canyon's luxury caboose, Clarkdale, AZ



Verde Canyon Railroad crosses the Verde River near Perkinsville, AZ.

Key characteristics of the Verde Canyon Railroad operation are shown in the following table:

Route-Miles	20.4
Annual Passengers	90,000
Commodities	Passengers Only
Rail Weight	90
Max. Track Speed	15 mph



Yuma Valley Railway (USG / YVR)

The Yuma Valley Railway was a tourist operation hosted and operated by the non-profit volunteer group, Yuma Valley Live Steamers Association/Yuma Valley Chapter-NRHS, and was not referred to in the 2000 Arizona State Rail Plan Update.

The railroad operated for nearly 20 years along the UP Yuma Industrial Lead before being shut down and embargoed by the U.S. Bureau of Reclamation on December 30, 2005. The US Bureau of Reclamation deemed that the tracks were not adequately maintained for passenger traffic nor were they indemnified for liability issues. Further, the Department of Homeland Security, the Arizona National Guard and the US Border Patrol had begun to utilize the YVR right-of-way for border patrol and military operations, thus blocking the tracks south of MP 6.1.

Prior to shut-down in 2005, the three-car tourist train pulled by a vintage diesel had operated over a 6.1-mile route between downtown Yuma and the Yuma Desalting Plant (Steam Siding). In the recent past, the passenger train had also operated from a small depot built by the Yuma Valley Live Steamers Association at Steam (MP 6.1) as far south as to Somerton (MP15) and Waltz (MP 18.1 – end of track). At Waltz, Yuma Valley Railway has also stored a variety of vintage locomotives and a passenger car.

The Yuma Valley Railway line was originally built in 1914 for the US Reclamation Service in order to build a new system of irrigation canals, levees and dikes on the Colorado River. The track chart further indicates that this rail line was in part leased to Southern Pacific in 1935, and jointly used by 1946 contract that has also applied to the Union Pacific since their merger with the Southern Pacific Railroad in 1996.

A Union Pacific Railroad track chart with a revision date of December 6, 2001, shows the Yuma Industrial Lead having 80, 85 and 90 pound rail over a distance of six miles. In 2007, current end of track is MP 5.5 (Yuma County Water Quality Improvement Center). Beyond that distance, between MP 6.09 and MP 18.1, the track chart indicates that the line was abandoned (approved by the Interstate Commerce Commission) in 1983. Although technically abandoned, the track to MP 18.1 was utilized by Yuma Valley Railway until the late 1990s. The track and rails remain in place in 2007.

The Yuma Valley Railway equipment is currently stored on the main line in downtown Yuma near MP 1. The Yuma Valley Live Steamers Association phone number has been disconnected and all train service has been mothballed. In a partnership with the US Bureau of Reclamation, the City of Yuma has begun a comprehensive trail/paved pedestrian/bike path system adjacent to the rail line from downtown Yuma to MP 6.1.



**Yuma Valley Railway train, stored out-of-service
in downtown Yuma, AZ. since the USBR track embargo of December 2005.**

Key characteristics of Yuma Valley Railway are shown in the following table:

Route-Miles	6.5 (last operated) / 18.1 (out of service)
Annual Carloads	Inactive
Commodities	Inactive
Rail Weight	80, 85, 90
Max. Track Speed	Inactive

Commuter Rail



The Maricopa Association of Governments (MAG) completed a High Capacity Transit Plan in 2003 that evaluated the potential for developing high capacity transit corridors. Specific transit technologies that were evaluated included commuter rail, light rail, and bus rapid transit. The plan identified over 129 miles of potential commuter rail corridors and provided initial ridership projections. It also included an assessment of the rail infrastructure that serves the MAG region and provided rough capital investment and operating cost estimates. The plan concluded that commuter rail was feasible with demand and service levels comparable to commuter rail systems operating in other regions. However, since the population densities sufficient to warrant investment in commuter rail were seen as occurring beyond the 20 year planning horizon, the Regional Transportation Plan (RTP) did not allocate capital funds for commuter rail. It did, however, set aside \$5 million to continue planning for future commuter rail service in the MAG region.

As noted above, the Regional Transportation Plan set aside \$5 million for future commuter rail planning studies. It was initially assumed that MAG would undertake the next planning phase midway through the 20 year RTP planning horizon. However, this timeline was accelerated because of unanticipated rapid growth on the fringes of the metropolitan area, particularly in the west valley and northern Pinal County.

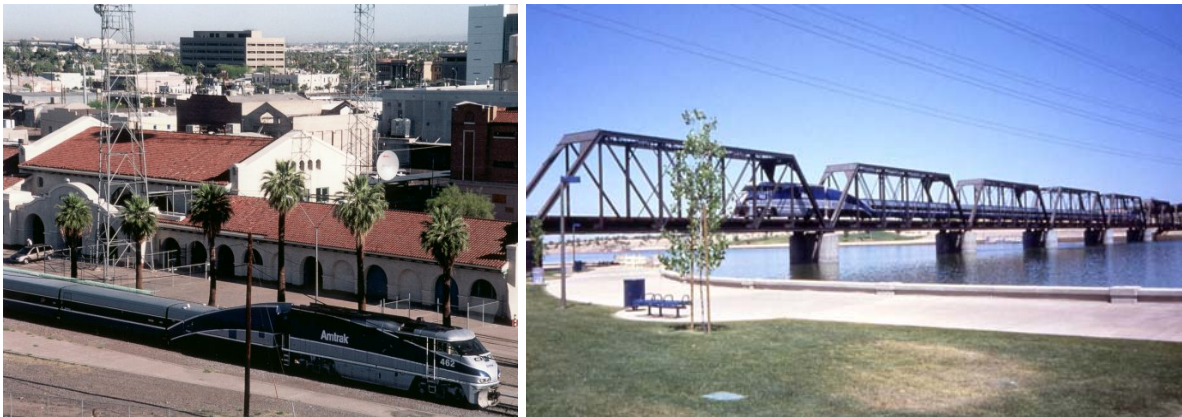
A Commuter Rail Strategic Plan will be developed in 2007. It will provide decision-makers with a comprehensive perspective on the costs, schedules, trade-offs, impacts, and policy implications of alternative implementation approaches for commuter rail. The plan will capitalize on the Arizona Department of Transportation's (ADOT's) State Rail Inventory and Assessment (the study described in this report) and previous technical analyses from the 2003 High Capacity Transit Plan. If there is continued support, MAG will initiate a commuter rail corridor development plan in FY 2008. The corridor development plan would provide a conceptual design and operating scenario for a specific rail corridor in the MAG region for the next 20 years.



Other Rail Transportation Planning



High Speed and Intercity Passenger Rail



The Arizona Department of Transportation is a member of States for Passenger Rail Coalition, an alliance of state departments of transportation that supports intercity passenger rail initiatives and advocates federal funding of same.⁵²

The 1998 Arizona High Speed Rail Feasibility Study, conducted by Arizona Department of Transportation, examined long range transportation alternatives in the I-10 corridor between Phoenix and Tucson. The study area included Maricopa, Pinal and Pima counties. Transportation alternatives evaluated included highway widening, conventional rail and high speed rail, electric and magnetic levitation. The study concluded with a long-term vision of a partially elevated, exclusive right of way, high speed rail (electric) utilizing the existing UP alignment between Phoenix and Tucson.⁵³

In the first quarter of 2007, ADOT released a Request for Qualifications to update the 1998 Arizona High Speed Rail Feasibility Study. The new study will focus on implementing high speed passenger rail service between Phoenix and Tucson. Specific elements of the new study will be to evaluate and validate the six 1998 alternatives including no-build, highway widening, and four versions of rail technology applications. The study will also update implementation costs for the recommended alternative.

⁵² <http://www.s4prc.org/info>

⁵³ Executive Summary, Arizona High Speed Rail Feasibility Study, April 1998.

If there is continued support, ADOT will initiate a corridor development plan in 2008. The corridor development plan will provide a conceptual design and operating scenario for a February 14, 2012, opening day (Arizona's Centennial Statehood Day).

Transit Improvements in Maricopa Association of Governments Region

The 2003 Maricopa Association of Governments (MAG) High Capacity Transit Study projects travel demand to 2040, when the MAG region population is expected to reach seven million. The study compares commuter rail, light rail transit and bus rapid transit; evaluates alternatives utilizing a cost effectiveness calculation; and recommends an integrated system of high capacity transit corridors in an overall combination of commuter rail, light rail transit and bus rapid transit. The resulting plan, Proposition 400 – the Regional Transportation Plan, was presented to the voters in November 2004 and passed overwhelmingly. It provided a blueprint and funding/implementation schedule for highway and transit through 2025.



One of the final eastbound Amtrak *Sunset Limited* trains to serve the Valley crosses the dry Salt River in Tempe in June 1996. Downtown Phoenix is in the distance. Today, Tempe Town Lake is featured at this location, and METRO's new light rail bridge now occupies the foreground parallel to the railroad bridge.

Tourist / Excursion Railroad Services



Sierra Madre Express

The Sierra Madre Express is a charter-tourist train service based in Tucson, offering excursions in Mexico. Passengers board the luxury passenger cars in downtown Nogales, Sonora, and are treated to a one week; round-trip excursion through Mexico's famed Copper Canyon in the State of Chihuahua. In Mexico, the train is usually powered by leased Ferromex locomotives.

An effort is under way to move the northern terminal of the tourist operation from Nogales to Tucson, in order to allow the start of the tourist rail trip from the newly restored Southern Pacific depot in downtown Tucson. This would enable passport control and checked baggage in Tucson, with through passenger trains operating from Tucson to Hermosillo, Guaymas, Mazatlan and Copper Canyon.

Included in the effort is construction of a new wye in downtown Tucson, to facilitate the movement of a tourist train from the depot to the Nogales Branch. The wye and additional passenger track would further allow the Amtrak to pull off the main line for its stop at Tucson, and, because of this, would result in the passenger train not blocking the UP main line.



Grandluxe Rail Journeys (formerly American Orient Express)

Grandluxe Rail Journeys, formerly American Orient Express, is a charter-tourist train service based in Colorado, offering rail excursions throughout the western United States. For service specific to Arizona, GrandLuxe offers the National Parks of the West Tour.

Passengers board luxury passenger cars in Jackson, Wyoming, and are treated to a nine-day, one-way excursion through various national parks and sights in Wyoming, Utah, Nevada, California, Arizona (Grand Canyon, Sedona) and New Mexico.

In Arizona, the train is usually powered by leased Amtrak locomotives, and travels on the BNSF Railway and the Grand Canyon Railway.

Chapter 5

Class I Railroad Needs and Plans

Purpose

This chapter identifies current status and short-range needs and plans of the two Class I railroads [BNSF Railway (BNSF) and Union Pacific Railroad (UP)] in Arizona.

Discussion

Class I railroads generally do not disclose information, considered by them to be proprietary, regarding their needs and plans. In performing this study, both BNSF and UP were queried regarding their short-range needs, and both declined to provide specifics.

However, general and specific information is available with regard to immediate-future Class I capital improvement programs, and this information may be found in various professional publications such as *Traffic World*, *Railway Age*, *TRAINS* and *Progressive Railroading*. From these published articles, as well as from presentations made by the Class I railroads at railroad conferences, one may obtain a reasonable idea of priorities, in terms of immediate and high priority capital improvements. Also, informal discussions with local railroad officials and their contractors, and articles appearing in local newspapers, provide further indication of Class I railroad near-term plans. The following discussion is developed from these various sources.

In general, the Class I railroads see opportunity in growing global trade. Much of this global trade is moved in containers, and most of it – perhaps 70 to 75 percent of all intermodal goods traffic -- moves from Asia to West Coast U.S. ports.⁵⁴ Railroad intermodal traffic (containers or trailers on railcars) is the top revenue-producer for Class I railroads. The two Class I railroads which cross Arizona both carry large numbers of loaded containers eastward. BNSF stated in late 2006 that it expected to move 5.5 million intermodal loads in that year.⁵⁵ Not just in Arizona, but nationwide, the Class I rail infrastructure – track and signal system – is at capacity, because of the growth in rail traffic in recent years. Again, seeing the opportunity in growing volumes, the Class I railroads are improving their capacity. They are doing this by making operational changes, for example by emphasizing and encouraging long-distance unit trains (trains which do not require yard switching enroute) over less productive traffic. BNSF says that it is improving productivity by running longer trains and by utilizing the types of railcars that maximize the number of containers on a train.⁵⁶ The Class I railroads are also making infrastructure improvements. Arizona's two Class I railroads

⁵⁴ Roger Morton, "Creating Intermodal Capacity", *Logistics Today*, November 2006, page 24.

⁵⁵ *Ibid.*

⁵⁶ *Ibid.*

have been making infrastructure improvements throughout the state, but primarily on their main trunk lines which cross the state – the BNSF Transcon in northern Arizona, and the UP Sunset Route across southern Arizona.

BNSF Railway

The BNSF Transcon across Arizona has been double-tracked for years. Over the last several years, BNSF has installed CTC over the entire route across Arizona, and has placed crossovers approximately every twenty miles. BNSF is further improving throughput on its Transcon by triple-tracking the Cajon Pass in California (to the west of Barstow, California), and public funding is triple-tracking the Transcon between Los Angeles and Fullerton.⁵⁷ As stated earlier in this report, there remain a few sections between Arizona and Chicago where the Transcon is still single-tracked, and BNSF plans to change these to double-track by the end of 2008.

The great emphasis placed by BNSF (or any other Class I railroad) on its main trunk lines is no surprise. Beginning with the 1980 Staggers Rail Act, deregulation has allowed railroads to manage their operations almost like other private businesses, abandoning non-productive lines and, in general, concentrating on traffic which results in high revenue and which can be handled and moved at relatively lower cost. Now, with capacity constrained by the existing infrastructure, and global trade resulting in record goods movement levels, railroads are enjoying unprecedented revenue levels. The Transcon, connecting Los Angeles and Chicago, is BNSF's premiere route, and perhaps the leading intermodal corridor in the United States. Intermodal traffic – predominantly containers on flat cars – surpassed coal as the railroads' top revenue-maker in 2004.⁵⁸ In 1984, there were 13 intermodal trains per day on what was then The Atchison, Topeka and Santa Fe Railway Company (ATSF) main line across Arizona⁵⁹; today most of the 120 trains per day are intermodal.

As reported in Chapter 1, there are strong indications that BNSF is also improving its Phoenix Subdivision, which connects Phoenix with the Transcon. Also, BNSF is upgrading its yards and other infrastructure in the Phoenix region.

As reported in Chapter 10, there are further indications that BNSF may be investigating opportunities to locate a major intermodal/transloading facility away from the Ports of Los Angeles and Long Beach, one that may serve growing freight demand in Las Vegas and Phoenix.

Union Pacific Railroad (UP)

As is the case with BNSF, UP concentrates its attention on its long-distance haul traffic. The UP Sunset Route is discussed in Chapter 1, and it is no surprise that UP is

⁵⁷ Private communication between BNSF official and Systra, July 2006.

⁵⁸ Tony Hatch, "No intermission for intermodal", *Progressive Railroading*, September 2006, page 24.

⁵⁹ "Intermodal Trains Per Day, 1984", *TRAINS*, September 2005, page 40.

considering plans to accelerate the double-tracking of that route to accommodate growing demand for goods movement.

UP has been increasing its capital spending in order to take advantage of traffic growth, and, in late 2006, planned to spend \$2.8 billion that year, to complete the double-tracking of fifty percent of the Sunset Route, between Los Angeles and El Paso, by the end of that year, and to add new terminals along that route.⁶⁰

UP plans one such new terminal in Pinal County east of I-10 between Red Rock and Picacho Peak. The Pinal County Board of Supervisors voted to change the land use plan to accommodate a railroad switching yard.⁶¹

Concentration on Unit Trains and Long-Haul Traffic

With limited railroad capacity and rapidly-rising demand, an important trend has become clear. Class I railroads place priority on high revenue and relatively lower cost traffic, which in general means unit trains over long distances. In northern Arizona, BNSF has stated to local Arizona officials that some party other than BNSF must provide local switching services, and that “if you have enough carloads, we’ll pick them up.”⁶²

Although there is no pat answer regarding what constitutes enough business to interest BNSF or UP in stopping through trains to handle Arizona traffic, one must recognize that Arizona is but 300 railroad miles from the ports of Southern California, and therefore close to the western terminal of Class I major business corridors.

Conclusions

Much of Class I railroad needs and plans in Arizona relates directly to the two major “transcontinental” rail routes across the state, which carry considerable bridge traffic (through traffic that neither originates nor terminates in Arizona). These transcontinental routes will continue to rank high on the priority lists of those Class I railroads.

On the other hand, there is a substantial amount of interest, on the parts of both BNSF and UP, in traffic that originates and terminates in Arizona (See Figures 1 and 2). Annual tons originating in Arizona is about five million; annual terminations are about 28 million tons. The BNSF and UP facility upgrades in the Phoenix region show that the transportation of goods related to the region’s growth is important to the railroads.

⁶⁰ Roger Morton, “Creating Intermodal Capacity”, page 24.

⁶¹ “Pinal County Supervisors Vote in Favor of UP Railyard Plan”, *The Arizona Daily Star*, November 30, 2006.

⁶² BNSF comments reported by Kingman and Flagstaff officials.

Chapter 6

Needs of Arizona's Small Railroads

Purpose

This chapter identifies short-range infrastructure capital investments and needs of Arizona's short line, industrial and mining railroads.

General

Arizona's small railroads have been eminently helpful in providing information utilized in preparation of this report. A reason for this willingness to help, in contrast with the Class I railroads, is that small railroads are not as concerned about competition as are the Class Is. Another reason is that small railroads are highly interested in the possibility of federal or state assistance.

A large number of small railroads came into existence following the 1980 Staggers Rail Act. Virtually all of these new small railroads had been relatively low-traffic-level branch lines of Class I railroads. The Class Is sold or leased many of these lines to small railroad entrepreneurs. Freed from the federal labor protection requirements of the Class Is, small railroads have been able to reduce their costs sufficiently to keep a business going even at relatively low business volumes.

But there also has been a problem inherent in the fact that these short line railroads formerly were the least productive parts of larger railroads that sold or leased them. Those larger railroads were bankrupt or near bankrupt in the 1970s, they were unable to put much money into maintenance or rehabilitation, and what they did invest was largely in their higher-traffic lines. So a common and chronic problem of small railroads is a track infrastructure which is not in a state of good repair. Old, lightweight rail and ties also in need of replacement are expected problems of small railroads. In addition, a new and heavier railcar, 286,000 pounds gross weight, became the interline standard on United States railroads in the early 1990s. Unfortunately, many small railroads across the United States have old bridges and track structure that cannot accommodate the heavier railcar.

Another generality is that small railroads do not earn revenue sufficient to build themselves out of their infrastructure problems.

Arizona's Small Railroads

Chapter 1 contains the railroad-by-railroad description of Arizona's rail lines, and includes information provided by state officials, the railroads themselves, and others.

A common rule-of-thumb measure of railroad viability is the number of carloads moved per mile of railroad track in the course of a year. This rule of thumb arises from the relation between the number of carloads moved, a surrogate for revenue, and the cost of maintaining a railroad, in terms of route-miles to be maintained.

It must be emphasized that this rule-of-thumb measure is but an indicator; it is not necessarily predictive. Years ago, the Federal Railroad Administration established twenty carloads per mile as one of its criteria for federal funding assistance under the Local Rail Freight Assistance program. With certain exceptions and among other requirements, FRA said that a project was eligible for federal financial assistance only if the line of railroad carried more than twenty carloads per mile during the most recent year of operation.⁶³ There are no widely-accepted carloads per mile figure by which one can determine whether a low traffic density rail line is viable; however, the range of 20 to 100 perhaps encompasses the situations which warrant further investigation.

The following table shows annual carloads, route-miles and carloads per mile on Arizona's active small freight railroads.

Railroad	Annual Carloads	Route-Miles	Carloads/Mile
Apache Railway	11,422	38	301
Arizona & California	18,922	106	179
Arizona Central	1,050	39	27
Arizona Eastern	7,310	135	54
Black Mesa & Lake Powell Railroad	84,000	78	1,077
Copper Basin	13,040	55	237
San Pedro & Southwestern	1,350	7	193

Source: Arizona railroads and RLBA calculations.

Notice that most of Arizona's small railroads are doing fairly well when measured by the carloads-per-mile rule of thumb. The Arizona Central also has a relatively robust passenger tourist operation, which appears to be more important than its freight operation. The Arizona Eastern's carloads per mile will rise considerably when the new mine opens at Safford.

Some of the railroads operating in Arizona today – notably Apache Railway, Arizona & California and Copper Basin – have very well maintained infrastructure with relatively heavy rail, which can carry relatively long and heavy trains at 25 mph and above and also accommodate 286,000 pound gross weight railcars. These railroads evidently enjoy sufficient revenue to maintain their infrastructure at a level generally higher than many U.S. short line railroads.

⁶³ 49 CFR Part 266, Local Rail Freight Assistance to States, §266.17, Federal Register Vol. 55, No. 231, November 30, 1990, page 49651.

The Arizona Central, Arizona Eastern and San Pedro & Southwestern all recognize their infrastructure requires constant attention if not upgrading, and two of these railroads have definite plans – described in Chapter 1 – to improve their track infrastructure and therefore maximum permissible train speed.

What about the future? As Yogi Berra said, “The future ain't what it used to be“. As the most difficult thing to predict is the future, no attempt is made in this report to predict the future. Suffice it to say that some of Arizona's small railroads have managed to remain in operation for years, despite the vagaries in the price of copper. This suggests additional observations; that is, most of Arizona's small railroads are or have been copper mine railroads, and most of Arizona's small railroads are virtually single-customer-railroads. Two of the active small railroads are owned by the single or most important customer. It is generally accepted that absence of diversification in the customer base is generally not the best situation for any business.

Arizona's Grand Canyon Railway and Verde Canyon Railroad are successful tourist railroads, in a state where tourism is an important industry.

Conclusions

The needs of Arizona's small railroads are the same as for any business, stability, or better, growth. Arizona's small railroads have been tenacious, and, from all indications, well-managed, in the face of rising and falling copper prices.

Many states have found it in the public interest to support and encourage their railroads, considered to be important components of the state's economy. Some states – Pennsylvania is a notable example – provide funding assistance to their railroads.



Arizona Eastern Railway serves the Phelps Dodge Smelter at Miami, AZ.

Chapter 7

Federal Funding

Purpose

This chapter identifies the potential federal grants, loans and tax credits which may be available for Arizona freight railroad improvements.

General

Unfortunately, the Local Rail Freight Assistance (LRFA) program, a staple for low-traffic-density railroad funding in the 1980s and early 1990s, was last funded by Congress in 1995.

Therefore SAFETEA-LU, the current federal surface transportation authorization, is the logical starting point of this discussion. Signed into law by the President in August 2005, the “Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users,” provides federal transportation funding over a six-year period. SAFETEA-LU is the successor to ISTEA (Intermodal Surface Transportation Efficiency Act of 1991) and TEA-21 (Transportation Equity Act for the 21st Century (1998).

ISTEA encouraged not only intermodality but also flexibility in utilization of federal surface transportation funds. TEA-21 continued the encouragement of flexibility, including the practice that states and metropolitan planning organizations may employ federal funding from various sources in rail projects. As a result, federal funding of rail projects has come from the Surface Transportation Program (STP), National Highway System, Congestion Mitigation and Air Quality Improvement (CMAQ) and other programs. Some states have used this flexibility; others have not. This heritage of flexibility in the use of federal transportation funding is carried over into SAFETEA-LU.

Briefly, SAFETEA-LU:

- Increases grade crossing safety funds (the Section 130 program)
- Earmarks funding for a number of freight rail projects
- Greatly increases Railroad Rehabilitation and Improvement Financing (RRIF)
- Reduces the threshold for TIFIA (Transportation Infrastructure Finance and Innovation Act)
- Improves the focus on freight projects
- Adds new freight rail authorization categories

Federal Rail/Highway Crossing Safety

Section 1401 of SAFETEA-LU, Highway Safety Improvement Program, elevates Federal funding of the Section 130 grade crossing improvement program to \$220 million annually (from \$165 million). This funding is used for the improvement of grade crossing safety by either eliminating or improving the grade crossing. Within ADOT, the Utilities & Railroad Engineering Section utilizes these funds to improve existing railroad grade crossings throughout the state.

Earmarks

A number of freight rail projects received earmarks. These included new freight rail intermodal facilities in North Carolina and Ohio; grade separation projects in New York, Colorado, Michigan, Nebraska, California and Wisconsin; California's Alameda Corridor East; the Virginia-West Virginia-Ohio Norfolk Southern "Heartland Corridor" intermodal doublestack clearance project; Boston-Worcester Massachusetts rail corridor improvements; several railroad improvement projects in Vermont; and many other railroad-related projects. Use of earmarks is perhaps one of the best opportunities to obtain federal transportation funding, as demonstrated in SAFETEA-LU. Arizona received 17 earmarks in SAFETEA-LU, for a total of \$137.7 million.⁶⁴ The next federal surface transportation authorization could be as early as 2009.

Railroad Rehabilitation and Improvement Financing (RRIF)

The Rail Rehabilitation and Improvement Financing (RRIF) program provides direct loans and loan guarantees to state and local governments, government-sponsored authorities and corporations, railroads and joint ventures that include at least one railroad. Eligible projects include: (1) acquisition, improvements or rehabilitation of intermodal or rail equipment or facilities (including tracks, components of tracks, bridges, yards, buildings and shops); (2) refinancing outstanding debt incurred for these purposes, or (3) development or establishment of new intermodal or railroad facilities. Section 9003 of SAFETEA-LU improves this program by eliminating some onerous loan conditions and by increasing the total authorization in loans outstanding to \$35 billion (from \$3.5 billion). Loans can be for periods up to 25 years. (Incidentally, passenger rail projects are eligible. The Great Smoky Mountain Passenger Railroad is an example of RRIF assistance to passenger rail.)

Transportation Infrastructure Finance and Innovation Act (TIFIA)

The Transportation Infrastructure Finance and Innovation Act (TIFIA) provides credit assistance on flexible terms directly to public-private sponsors of major surface transportation projects to assist them in gaining access to capital markets. TIFIA authorizes the Secretary of Transportation to collect fees from borrowers and fund up to \$10.6 billion of direct loans, loan guarantees and lines of credit to support up to 33 percent of project costs. Eligible projects include highway and capital transit projects,

⁶⁴ "SAFETEA' pays off for railroads", *TRAINS*, November 2005, page 18.

intercity bus and rail projects (including Amtrak and maglev systems), and publicly-owned intermodal freight transfer facilities on or adjacent to the National Highway System. SAFETEA-LU reduced the TIFIA threshold from \$100 million to \$50 million, thus expanding project eligibility. The Secretary of Transportation selects projects based upon factors including national significance, credit-worthiness and private sector participation.

Section 1306. Freight Intermodal Distribution Pilot Grant Program

The Secretary of Transportation is to establish and implement a freight intermodal distribution pilot grant program, to facilitate and support intermodal freight transportation initiatives at the state and local levels to relieve congestion and improve safety, and provide capital funding to address infrastructure needs. States are to submit applications to the Secretary for grants. Eligible projects are to help relieve congestion, improve transportation safety, facilitate international trade and encourage public-private partnership. Projects may include those for development and construction of intermodal freight distribution and transfer facilities at inland ports. \$6,000,000 is authorized for each of FY 2005 through 2009, to be appropriated from the Highway Trust Fund.

Section 1602. State Infrastructure Banks

State Infrastructure Banks were created by Section 350 of the National Highway System Designation Act of 1995. They allow states to set aside up to ten percent of their federal transportation funding for public-private investments. State Infrastructure Banks may offer loan and credit options to help finance infrastructure projects. Money for projects may be loaned at low rates to private investors, or may serve as a capital reserve for bond and debt financing. The loan may be repaid with revenues generated by the project. SAFETEA-LU provides that a State Infrastructure Bank may make loans or provide other forms of credit assistance to a public or private entity in an amount equal to all or a part of the cost of carrying out an eligible project.

Section 9002. Capital Grants for Rail Line Relocation Projects

This provision of SAFETEA-LU requires the Secretary of Transportation to carry out a grant program to provide financial assistance for local rail line relocation and improvement projects. A State is eligible for a grant to improve adverse effects of rail traffic on safety, motor vehicle traffic flow, community quality of life or economic development. At least 50 percent of all grant funds are to be provided as awards of not more than \$20 million each (adjust for inflation beginning after FY 2006). The non-federal share is at least ten percent, in cash or in kind (real or tangible personal property, services of state employees, etc.). The state should determine anticipated public and private benefits associated with rail line relocation, and the Secretary of Transportation shall consider feasibility of seeking financial contributions from private entities. SAFETEA-LU authorizes \$350 million for each of the fiscal years 2006 through 2009.

Section 1117. Transportation, Community and System Preservation Program.

This section of SAFETEA-LU directs the Secretary of Transportation to establish a comprehensive program “to address the relationships among transportation, community, and system preservation plans and practices and identify private sector-based initiatives to improve such relationships.” This section further states that the Secretary of Transportation shall allocate funds made available to carry out this section to states, metropolitan planning organizations, local governments and tribal governments to carry out eligible projects to integrate transportation, community and system preservation plans and practices. Priority consideration shall be given to applicants that have instituted preservation and development plans, and where policies direct funds to high-growth areas, to guide metropolitan expansion. SAFETEA-LU authorizes \$25 million in 2005 and \$61.25 million in each of years 2006 through 2009 to carry out this section.

Section 1808. Congestion Mitigation and Air Quality (CMAQ)

Section 1808 of SAFETEA-LU adds some direction to the Congestion Mitigation and Air Quality (CMAQ) program, which funds projects which reduce congestion and help meet Clear Air Act requirements. CMAQ funding may be used on freight and passenger rail projects which accomplish CMAQ goals. As examples, CMAQ funding has been used to add freight rail infrastructure (track) in a heavily-congested freight rail corridor and to build freight intermodal facilities.

Other Federal Funding

The Economic Development Administration in the Department of Commerce administers grants to public works projects in areas experiencing substantial economic distress and in areas under threat of serious economic structural damage.

Tax Credits

The American Jobs Creation Act of 2004 provides a tax credit to help regional and short line railroads fund infrastructure projects. The credit is capped at the dollar figure which results by multiplying \$3,500 by the number of track-miles owned or leased.⁶⁵ The law allows small railroads a tax credit of 50 cents on the dollar for eligible track improvement expenditures and is available for three years beginning 2005.⁶⁶ The tax credit provision expires December 31, 2007.⁶⁷

⁶⁵ “New law drops fuel tax, adds tax credit”, *Progressive Railroading*, November 2004, page 11.

⁶⁵ Richard F. Timmons, “Calculating the tax credit and its value”, *Railway Age*, December 2005, page 52.

⁶⁵ Jeff Stagl, “Credit application”, *Progressive Railroading*, April 2006, page 18.

Conclusions

Although the important LRFA funding ended, other legislation provides opportunities to fund freight railroads. Opportunities may be expanded by utilizing the considerable flexibility available in the law, as manifest in the last three major federal surface transportation authorizations.



Semaphores stand sentinel over Union Pacific's former mainline between Buckeye and Arlington, AZ.

Chapter 8

Railroad Preservation Opportunities

Purpose

The purpose of this chapter is to identify opportunities for railroad related preservation.

General

Railroad rights of way are preserved for various reasons, for example, for:

- Continued rail operations
- Future rail operations
- Present or future transportation corridor
- Bicycle and pedestrian use
- Securing railroad history

It has been said often among transportation professionals that once a right of way is abandoned, one will never be able to re-constitute it and use it for transportation purposes again. Because of this, there is sometimes a reluctance to allow abandonment and sale of railroad rights of way. Federal rail abandonment procedures include the option of turning the abandoned railroad right of way into a trail, to be preserved for potential future re-activation as a railroad line.

Need for Preservation

Some lines may need no preservation. The following table shows traffic on Arizona freight railroads in terms of estimated annual million gross tons:

It is quite clear that BNSF and UP will continue operating their main through lines across Arizona. These are high-traffic-density “transcontinental” main trunk lines. No preservation is needed; the private sector is utilizing its most important property.

Another way of looking at railroad viability is shown in the table included in Chapter 6, which lists Arizona’s small freight railroads, the annual carloads, route-miles and carloads per mile. Chapter 6 includes a discussion of small railroad viability.

Million Gross Tons

Line Segment	Annual Traffic in Millions of Gross Tons
BNSF Transcon	150
BNSF Phoenix Subdivision	18
UP Sunset Route	----
Yuma-Wellton	78
Wellton-Picacho	74
Picacho-Tucson	74
Tucson-Cochise	98
Cochise-NM border	90
UP Clifton Subdivision	0.32
UP Phoenix Subdivision	6
UP Nogales Subdivision	7
UP Chandler Industrial Lead	0.31
UP Tempe Industrial Lead	0.51
Apache Railway	0.9
Arizona & California	1.5
Arizona Central/Verde Canyon	0.1
Arizona Eastern	0.1
Copper Basin	1.3
San Pedro & Southwestern	0.1

Source: Railroads, and RLBA estimates.

Public Assistance to Continue Rail Operations

In some cases, it may be that public assistance is necessary for continued rail operations. Such was deemed the case in the 1970s when regulated U.S. railroads were failing financially as a result of burdensome regulatory constraints and highway competition. The federal Local Rail Freight Assistance (LRFA) program came into being, and until 1995, the last year in which Congress appropriated funding for that program; it played an important role in the preservation of low-traffic-density branch lines around the nation. Since the end of LRFA funding, a number of states have determined that it is in the public interest to preserve their railroad networks and prevent rail lines from being abandoned. A number of states have acquired railroad lines to prevent their abandonment, or have otherwise provided financial assistance to railroads in order to assure their continued operation. Pennsylvania is an example; the Keystone State continues a vigorous program of railroad preservation in order to serve the people of the state and to help the state's economy. Vermont is another. A considerable portion of Vermont's railroad network is state-owned and much of this network is leased back to railroads which operate over state-owned lines.

Railroading is a highly infrastructure-intensive industry. The maintenance and rehabilitation of track and bridge infrastructure requires regular and continued investment of resources. Unlike the trucking industry, which pays fuel taxes and enjoys a national public highway network over which to serve its customers, the railroad industry by and large owns its right of way, track and signal infrastructure, and must generate sufficient revenues to maintain those assets, or go out of business. Railroads are the only unsubsidized mode of transportation. Railroads own and maintain their operating infrastructure.

Small railroads in particular have difficulty maintaining their infrastructure. In the first place, hundreds of small railroads (short lines) were created after the Staggers Rail Act of 1980 allowed large railroads to divest themselves of relatively non-productive, low-traffic-density lines. A short line industry grew and, generally freed from the requirements of federal labor protection laws, has been able to provide responsive service to customers, and connect them with the larger railroads. But the infrastructure which these short line railroads inherited were generally in poor condition, the result of pre-Staggers regulation which forced railroads to continue serving customers at federally-imposed rates. Also, small railroads do not in general generate revenues sufficient to maintain rail track and bridges in a high state of good repair; many simply keep the track in sufficient repair to avoid being shut down by FRA inspectors. And finally, the new interline standard of the 286,000-pound gross weight railcar came into being a dozen years after Staggers, and there are many small railroads that simply don't have the resources to upgrade bridges and track to carry the heavier loads, which more and more are becoming characteristic on the nation's railroad network.

Rail Banking

When rail rights of way are abandoned, they are no longer part of the federally-regulated railroad transportation system and, depending upon application of state law, these rights of way may revert to landowners with underlying rights.⁶⁸

In 1983 the Congress amended the 1968 National Trails System Act to give interested parties the opportunity to negotiate agreements with rail carriers to use railroad rights of way for trails.⁶⁹ This "rail banking" preserves right of way for possible restoration of rail service in the future and allows interim use of the right of way as a trail.

Rail banking is a voluntary agreement between the rail carrier proposing to abandon a line, and the party interested in using the right of way as a trail. The trail sponsor must agree that use of the right of way is subject to re-activation of rail service, and must assume managerial, financial (including payment of property taxes) and legal responsibility.⁷⁰

⁶⁸ U.S. GAO, "Surface Transportation: Issues Related to Preserving Inactive Rail Lines as Trails", October 1999, page 1.

⁶⁹ *Ibid.*

⁷⁰ U.S. GAO, page 2.

Some rail carriers do not own the land on which they operate. Adjoining property owners may have “reversionary rights”, meaning that when a right of way is abandoned, the land may then be available for full and unencumbered use by the landowner, again, depending upon state law. In other cases, rail carriers own their land outright, and can dispose of that land as they see fit, after the Surface Transportation Board authorizes abandonment of rail service.⁷¹ Indeed, some railroads have abandoned rail service and then have held the land, in some cases for years.

Construction of rail-banked trails has been performed with federal funds, for example, Transportation Enhancement Funds, a subset of the Surface Transportation Program.⁷²

Acquisition of a Rail Line

It is of course possible for a government entity to acquire a railroad line and use it for rail service or other purposes. As mentioned above, states have acquired railroad lines. In some cases, they have done this in order to preserve the continuation of rail service.

As stated above, the State of Vermont owns a considerable portion of railroad infrastructure within the Green Mountain State and much of that infrastructure is active. Public entities have acquired railroad right of way for other public purposes. The City of Cincinnati acquired a riverfront rail line, used the property for public purposes and provided the railroad customer with an alternative routing.



The lobby of the Phoenix Union Station in downtown Phoenix, AZ. Although passenger trains have not utilized this historic 1923 depot since Amtrak ceased through service in June 1996, this classic structure may someday reopen as the hub of a regional and statewide passenger rail system.

⁷¹ U.S. GAO, pages 3 and 4.

⁷² U.S. GAO, page 4.

Conclusions

In summary, the opportunities for railroad related preservation:

- depend upon private and/or public needs,
- must observe applicable law, and
- may require financial resources to put those opportunities into action.

Specific opportunities for railroad related preservation may arise (1) with regard to an active railroad operation, where assistance is needed to maintain the line in operation, (2) when a railroad line goes out of service and is abandoned, and it is deemed desirable to protect a line from going out of existence, so that it may be re-activated in the future, or (3) when a higher and better use of a line is deemed appropriate, and other means or routing are found to accommodate rail customers on the line.

Clearly, the private or public sector must evaluate the costs and benefits related to any of these opportunities. Where a public entity is concerned, a determination must be made as to whether the public interest is served by any proposed action.



BHP Billiton's Magma Arizona Railroad near Queen Valley, AZ.
This scenic line which served the famous mining town of Superior for over 80 years has been dormant since 1997.

Chapter 9

Right Of Way Preservation Strategies

Purpose

The purpose of this chapter is to identify and discuss railroad right of way preservation strategies.

General

Chapter 8 discussed railroad preservation opportunities; this chapter identifies and discusses preservation strategies. This chapter should be looked at in conjunction with Chapter 8, inasmuch as the type of strategy will depend upon the type of preservation opportunity sought.

Passenger Rail Use

Growing public jurisdictions may seek opportunities to preserve railroad rights of way in order to accommodate increasing passenger transportation requirements (with or without continued freight movement on a corridor). A government entity may approach the owning railroad and negotiate an agreement for shared use of a corridor, or for exclusive use of a corridor, or some of its trackage, for passenger operations. The exclusive use option may have to include alternative provisions for serving freight customers on the line, and one such alternative could be construction of additional trackage to the customers, on the same or new right of way.

Public jurisdictions desiring to preserve railroad rights of way for public transportation purposes may wish to develop their strategies in consideration of the following:

- when the right of way is needed (Timing is right)
- analysis of the public benefits and needs of passenger transit use
- value of the right of way to the railroad owner (Willingness to sell)
- degree to which the railroad owner may be interested in negotiating shared use, lease or acquisition of the corridor (Willingness for trackage rights and access)
- analysis of the benefits of ownership vs. leasing and / or user fees
- available source(s) of funding for railroad right of way acquisition

Freight Rail Use

Another purpose of preservation could be to maintain the freight rail opportunity (continued or future service). There may be certain circumstances where government may intervene to preserve and maintain freight rail service, either currently or in the future. Preservation strategies in this case could consider the following scenarios:

- whether the current freight railroad operation generates sufficient revenue to cover maintenance costs. Rail abandonment or diminished service levels have the direct result of enticing shippers to ship freight by truck instead of by rail, which further results in the increase of semi-truck traffic on roadways.
- whether the loss of freight operations or abandonment of the line is a possibility
- whether the private sector is able to preserve, and is interested in preserving, the line
- whether government assistance is in the public interest
- current state and local law on the subject
- whether federal agencies may be interested, and whether they may assist
- whether federal funding is available
- whether state grants, loans or financial incentives, for example tax incentives, are appropriate (i.e., are in the public interest)
- whether a private or government entity may make an Offer of Financial Assistance (OFA) in an abandonment action filed with the Surface Transportation Board (STB)
- whether rail banking is a reasonable option

Future Use or Trail use

The strategy may be directed toward long-term rail corridor preservation for potential future use. In this case, the strategy may include keeping the options open, recognizing that abandonment of a corridor may result in the impossibility (or extreme difficulty) in re-constituting it.

This strategy is open to several paths, depending on the circumstances:

- Outright acquisition, assuming the railroad owner is amenable.
- Alternatively, first option to buy, or similar negotiated arrangement with the owner.
- In the case where a rail line appears to be a candidate for future abandonment, the strategizer may wish to prepare to act within the STB's abandonment timelines.

Strategy Should Be Case-Driven

The reader will notice that the above discussion is many-layered, and is open to various circumstances and possibilities. This is inherent, and perforce draws one to the conclusion that, ultimately, a preservation strategy necessarily should be tailored to the specific issues and factors of any given case. Strategy cannot be based on a "cookie cutter" formula, but rather must be developed based on the merits of the individual case, and in consideration of all relevant factors. It may be advisable to develop any individual-case rail preservation strategy with professional experts who understand railroads.

Federal Funding

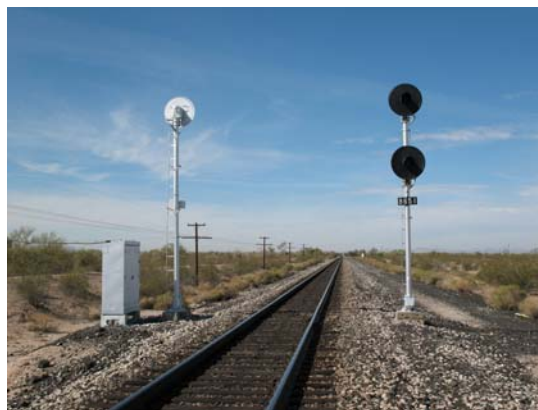
It is important not to be constrained in evaluating funding options. Federal funding opportunities deemed most pertinent to freight rail projects are described in Chapter 7. The flexibility encouraged by recent-year federal surface transportation authorizations (ISTEA, TEA-21 and SAFETEA-LU) has been utilized, with creativity, in many states desiring to improve railroad use.

Because of their relation to preservation, it is here emphasized that:

- (1) SAFETEA-LU defines “Transportation Enhancements” to include funding for *preservation* of abandoned railway corridors (including conversion and use of the corridors for pedestrian and bicycle trails) and for rehabilitation of historic railroad facilities (page 55, Conference Report), and that
- (2) SAFETA-LU includes a Section 1117, Transportation, Community and System Preservation Program, which directs the Secretary of Transportation to establish a comprehensive program “to address the relationships among transportation, community, and system preservation plans and practices and identify private sector-based initiatives to improve such relationships.” Please refer to Chapter 7 for additional information on Section 1117.

Rail History and Railroad Preservation Efforts in Arizona

- McCormick-Stillman Railroad Park/Scottsdale Railroad & Mechanical Society (Scottsdale - established 1971)
- Phoenix Trolley Museum/Arizona Street Railway Museum (Phoenix - established 1975)
- Arizona Railway Museum (Chandler - established 1983)
- Old Pueblo Trolley/Southern Arizona Transportation Museum (Tucson - established 1983)
- Arizona State Railroad Museum Foundation (Williams - established 1998)



The Arizona Department of Transportation has been involved in the renovations of the Kingman and Holbrook railroad depots in 2007. Federal, state, local and railroad funding partnerships make this historic preservation a possibility.

Conclusions

Multiple paths are available for development of a rail corridor preservation strategy, depending upon the objective and the number of factors which should be evaluated.

The development of a preservation strategy is necessarily specific-case-driven.

A number of federal assistance opportunities may be considered to assist in realizing a given strategy. A number of states have been imaginative in utilizing the flexibility inherent in federal surface transportation authorization.



Magma Arizona Railroad's locomotive No. 6 is preserved and on display at Scottsdale's McCormick-Stillman Railroad Park. The park's main building is a replica of Clifton, Arizona's historic Arizona & New Mexico Railway depot. (page 69)

Chapter 10

Conditions of Influence

Purpose

The purpose of this chapter is to identify current conditions of influence, including funding resources and mechanisms (private and public), public sector rail support and private sector rail support.

Discussion

The conditions of influence which may affect on-going and potential future actions involving Arizona's railroads arise from various sources, including:

- the perceptions and needs of the citizens of Arizona,
- public sector government activities (federal, state and local), and
- private sector activities.

Furthermore, both public and private sector initiatives may influence Arizona's economy and the well-being of the people of Arizona.

Interviews of Key Officials

At the beginning of this project, the ADOT Director of the Public Transportation Division asked that certain regional and local officials be contacted in order to obtain important inputs regarding their dealings, discussions and joint activities with Arizona's railroads. The following summarizes the results of those contacts, by region or locality.

Kingman. The City of Kingman is positioned on major transportation lanes: the BNSF Transcon, a major railroad corridor hosting about 120 trains per day, east-west interstate highway I-40 and north-south U.S. highway 93. Furthermore, Kingman is relatively close to major growth areas: Las Vegas, Nevada; Phoenix and the surrounding region of central Arizona; and Southern California. In addition, Kingman is situated on the CANAMEX Trade Corridor, defined by Congress in the 1995 National Highway Systems Designation Act as a high priority corridor, connecting Mexico, the United States and Canada on a route which includes Nogales, Tucson and Phoenix in Arizona; Las Vegas, Nevada; Salt Lake City, Utah; and Idaho Falls, Idaho.⁷³ Transportation improvements on the CANAMEX Trade Corridor offer the benefits of

⁷³ <http://www.canamex.org>

increased trade, tourism and economic activity. Completion of the Hoover Dam Bypass in 2008 will constitute an important CANAMEX improvement.

In consideration of the above, Kingman appears to have the opportunity to enhance its status as an important transportation location. Today there are BNSF industrial leads supporting freight transfer activities. Adjacent to the Mojave County/Kingman Airport is an industrial park with numerous industries and industrial lead tracks. The freight activity is said to include 50 to 60 railcar loads per week. Lumber and other building materials destined to Lake Havasu City and Las Vegas are unloaded and transferred to truck at Kingman. Wal-Mart reportedly was considering location of a distribution center at Kingman. Further, one of the largest buildings in Arizona, located in southwest Kingman at McConnico near I-40, remains vacant after the closure of a steel recycling plant. It is located between BNSF main line tracks; thus it may constitute a valuable asset to some industry.

Because of congestion at the Ports of Los Angeles and Long Beach, and in the Los Angeles region in general, consideration is being given to an inland port-intermodal terminal-distribution center east of Los Angeles in California, or along the BNSF Transcon in Northern Arizona. According to a Kingman economic development official, BNSF is interested and meets almost weekly with Kingman officials. Perhaps a reason for BNSF interest is a situation at the Ports of Los Angeles and Long Beach in which community groups and public officials “are reportedly close to blocking BNSF’s plan to build a near-dock rail transfer yard”.⁷⁴

BNSF is telling local officials along the Transcon that switching will not be provided by BNSF; other arrangements must be made to provide local switching.

BNSF states that it needs a way to move freight to Las Vegas. Kingman has land available to support a transload facility. After the new bridge across the Colorado River is completed, the trip to Las Vegas will be shortened.

Flagstaff and Other Cities on the BNSF Transcon. A coalition of public and private interests in the Flagstaff region investigated the potential for development of a rail/truck transportation and logistics center for the region. The 2004-2005 study investigated numerous sites and then focused on two. Camp Navajo-Bellemont was considered the top choice, given its proximity to the market and in particular two of the largest shippers. The City of Winslow was recommended as a second facility, given its location as a BNSF crew change point. The study estimated that there would be between 70,000 and 100,000 lifts per year, which volume was deemed sufficient. Unfortunately, the BNSF assessment of these sites was not encouraging. BNSF stated that any proposed location in Northern Arizona along the BNSF main line “would pose some significant operating challenges” given that the main line “is operating near capacity” and has “little room for additional traffic. Stopping these trains to service a Flagstaff-area facility would seriously impact [BNSF’s] ability to serve existing customers on these lines.

⁷⁴ Bill Mongelluzzo, “Not in My Back Yard”, *Traffic World*, November 13, 2006, page 46.

Finally, BNSF is not in a position to contribute capital investment to a Northern Arizona intermodal facility.”⁷⁵

A BNSF official, Vann Cunningham, Assistant Vice President of Development, is quoted in *National Real Estate Investor* as saying that BNSF won't consider opening a new intermodal facility for fewer than 250,000 container lifts per year, and that “most communities will never have the volume they need for an intermodal yard”.⁷⁶ The same publication states that the best locations for intermodal yards “are at the end of a lengthy route”.⁷⁷

Tucson. One local official stated that the main issue is the great number of trains, estimated at about 50 per day, which UP moves between Picacho and New Mexico on what is mostly a single track. There are serious problems, this official said, because of the general absence of grade-separated crossings in urban areas. And more trains are projected.

Another issue important to the region is the North American Trade Corridor (CANAMEX Trade Corridor), which passes through Nogales, Tucson and Phoenix. Tucson is also interested in Tucson-Phoenix passenger rail. (The City of Phoenix is similarly interested in preserving and securing Phoenix Union Station for both historic, redevelopment and transportation related needs.)

The Tucson-Mexico Trade Office is promoting a plan to begin Sierra Madre Express tourist train service, to Mexico's Copper Canyon, with trains beginning their journey at Tucson. There are cross-border issues such as commissary (moving food across the border) which are being discussed. An immediate goal is construction of a wye in downtown Tucson to allow the tourist train access to Tucson's passenger terminal. UP appears to be amenable.

The Tucson-Mexico Trade Office is also planning to create an inland port (Puerto Nuevo), with rail and truck infrastructure. Additionally, a private venture has already begun operating a rail-truck shipping warehouse district in East Tucson under the name Port of Tucson. The purposes are to reduce congestion and to realize economic development benefits.

Tucson is also a freight terminal: automobiles, bulk cement and farm produce are some of the commodities moved by rail to or from the region.

Yuma. As described in Chapter 1, the plan to connect Punta Colonet, a Mexican port, with UP's Sunset Route, is a controversial item in Yuma. UP plans, if realized, would result in a new railroad line in or near Yuma. UP has purchased rights to the land for one optional route, and will be working on obtaining more options, according to Robert

⁷⁵ *Flagstaff Final Phase II Report*, 2005, Don Breazeale and Associates, Inc., pages 25-26.

⁷⁶ Matt Hudgins, “Railroad Renaissance”, *National Real Estate Investor*, November 2006, online version, http://nreionline.com/mag/real_estate_railroad_renaissance/index.html

⁷⁷ *Ibid.*

Turner, UP senior vice president of corporate relations.⁷⁸ Turner indicated that it would be five or six years at the earliest before a train would come through Yuma on a new rail line.⁷⁹

UP's plan to double-track its Sunset Route is also of interest to Yuma. Like Tucson, Yuma is concerned about the growing number of trains.

Grade Crossings. Grade crossings are an important issue in north and south Arizona. Residents of cities on the BNSF Transcon and on UP's Sunset Route experience significant problems with today's traffic delays at grade crossings and are concerned about the prospect of additional trains in the future.

Public Sector Rail Support

Key officials and other sources generally indicate support for improving passenger mobility in Arizona by new passenger rail systems including intercity, commuter and light rail transit. Phoenix has been described as the largest city in the United States without passenger rail service. The continued growing population of the Phoenix region suggests continued public sector support of passenger rail implementation.

The public and private sectors also are engaged in several economic development initiatives related to the existence of Arizona's railroads. This is indicated in the information provided by Northern Arizona officials regarding the potential development of intermodal facilities and logistics centers along the BNSF Transcon, and by Tucson officials who envision an expanded tourism business by locating the start point, for tourist train service into Mexico, at Tucson.

Private Sector Rail Support

The private sector supports rail where a profit can be made. In the case of freight movement, Class I railroads support their trunk line routes across Arizona as major and crucially important arteries of their systems. Class I railroads support origination and termination of freight traffic in Arizona to the extent that the revenues from and costs of such traffic correspond with corporate objectives. Small railroads in Arizona likewise support their rail lines to the extent that those lines support owners' objectives.

Private sector support of passenger rail is another matter. In general, Class I railroads will support passenger rail (other than Amtrak) on their rights of way only after resolution of the complex and difficult issues of liability, non-interference with freight traffic (including future freight traffic) and compensation. Small railroads sometimes are more interested in passenger rail, depending upon the revenue opportunity presented.

⁷⁸ Jeffrey Gautreaux, "Union Pacific wants to engage Yuma to find new rail route", *Yuma Sun*, November 7, 2006.

⁷⁹ *Ibid.*

Funding Resources and Mechanisms

Federal funding possibilities with regarding to assisting Arizona freight rail programs are described in Chapter 7. At present, the State of Arizona has no specific freight rail support program. Passenger rail programs are generally supported by federal (often through the Federal Transit Administration), state and local funding.

There are numerous ways in which private railroads may be supported by state and local government. There are a number of states which have various programs to assist private railroads. Some states have acquired railroad rights of way in times of adversity, and leased these lines to operating companies, or sold them to private interests in times of prosperity. Following are some examples of state rail assistance.

Pennsylvania perhaps tops the list with its competitive grant program for maintenance or construction projects of up to \$250,000, administered by the Pennsylvania Department of Transportation and in addition, the distribution by the Pennsylvania legislature of about \$20 million annually to larger projects. Both programs require a 30 percent private sector match.

Maine's Industrial Rail Access Program provides competitive grants, funded through general fund bonds. Indiana sponsors an Industrial Rail Service Fund for rail improvements. Connecticut allows railroads that provide both freight and passenger service an exemption from paying gross receipts taxes on a dollar-for-dollar match based upon making a qualified investment in service, physical plant or rolling stock. There are many other state programs; the above examples are meant only to be illustrative.

Some states redirect taxes collected from railroads away from the general fund and into a fund which supports rail improvements. See Chapter 1 for a discussion of "Best Practices/Peer Analysis", describing what some other states do to encourage railroad development.

In authorizing use of public funds/subsidies to support private railroad improvements, the public jurisdiction is recognizing the direct and indirect public benefits of the private railroads, whose benefits include:

- reduced transportation costs
- jobs
- tax revenue (to the federal, state, county and local)
- reduced highway maintenance cost
- reduced highway congestion
- reduced highway accidents
- reduced pollution (per ton-mile transported), rail transportation is considerable less polluting compared with highway transportation)
- reduced use of a non-renewable (fossil fuels) resource (similarly, per ton-mile, rail is considerably more efficient compared with highway transportation)

Conclusions

Public or private sector support of rail, freight or passenger, depends upon the perceived benefit.

Grade crossings are a subject perceived by the public as a problem, notably in urban areas where there are many trains or where slow-moving or stopped trains block crossings for excessive periods.

There are a great variety of ways in which the public sector can assist the private sector in providing the benefits of rail transportation to the public.



Copper Spike Railway's leased Brill Motorcar M-55 prepares to board passengers at Globe, AZ's restored depot in March 2006. The Historic Globe Main Street Program, Arizona Eastern Railway and Apache Gold Casino Resort sponsored this 15-mile round trip, limited time demonstration project to test the viability of tourist-passenger rail between downtown Globe and the Apache Gold Casino near Cutter, AZ. (see page 44)

Chapter 11

Contacts and Resources

(Rail Agency, Safety-Security, Railroad, Rail Transit and Preservation Contacts)

Rail Agency Contacts

Arizona Corporation Commission

Railroad Safety Section

1200 W. Washington Street

Phoenix, Arizona 85007

phone: Phoenix - 602 262-5601

phone: Tucson - 520 628-6550

24-Hour Emergency Contact - 602 542-7772

email - railroad@azcc.gov

web site - www.azcc.gov/divisions/safety/railroad/index.htm

Federal Railroad Administration (Region 7)

Federal Railroad Administration

1120 Vermont Avenue, NW, Stop 35

Washington, DC 20005

phone: 202 493-6000

Region 7 phone: 1-800 724-5997

web site - www.fra.dot.gov/us/home

Arizona Department of Transportation

Utilities & Railroad Engineering Section (ITD)

205 S. 17th Avenue Mail Drop 618E

Phoenix, AZ 85007

phone: 602 712-8692

web site - www.azdot.gov/highways/utilities/index.asp

Arizona Department of Transportation

Public Transportation Division (PTD)

206 S. 17th Avenue Mail Drop 340B

Phoenix, AZ 85007

phone: 602 712-8303

web site - www.azdot.gov/PTD/

Rail Safety-Security Contacts

POLICE EMERGENCY – Dial 911

BNSF RAILWAY - RAILROAD POLICE – 1-800-832-5452

UNION PACIFIC RAILROAD - RAILROAD POLICE – 1-888-877-7267

Arizona Department of Homeland Security

1700 W Washington

Phoenix, AZ 85007

ACTIC hotline phone: 877 2-SAVE-AZ (877-272-8329)

phone: 602 223-2680 (ACTIC)

phone: 602 542-7030

web site – www.azdohs.gov/

Arizona Department of Public Safety (DPS)

Arizona Counter Terrorism Information Center (ACTIC)

P.O. Box 6638

Phoenix, AZ. 85005

ACTIC hotline phone: 877 2-SAVE-AZ (877-272-8329)

phone: 602 223-2680 (ACTIC)

phone: 602 223-2000 (main DPS switchboard)

web site - www.dps.state.az.us/default.asp

Arizona Operation Lifesaver (AZOL)

3660 W. Suffield Lane

Tucson, AZ. 85741

phone: 520 403-8745 / 520 444-9443

web site - www.azol.org/

Railroad Contacts

Class-1 Railroads

BNSF Railway

P.O. Box 961056

Fort Worth, TX 76161-0056

phone: 1-800-795-2673

24-Hour Emergency Contact – 1-800-832-5452 (BNSF Railway Police)

For emergencies dial - 1

For Crossing Gate malfunctions / Grade Crossing issues dial - 2

web site – www.bnsf.com

Union Pacific Railroad

Union Pacific Railroad

1400 Douglas Street

Omaha, NE 68179

phone: Main Number: 402-544-5000

phone: Operator: 888-870-8777

24-Hour Emergency Contact – 1-888-877-7267 (Union Pacific Railroad Police)

Crossing Gate malfunctions / Grade Crossing issues – 1-800-848-8715

web site – www.up.com

Short Line Railroads

The Apache Railway

PO Box 857

Snowflake, AZ 85937-0136

phone: 928 536-9582

web site –

www.abitibiconsolidated.com/aciwebsitev3.nsf/site/en/papers/newsprint/snowflake.html

Arizona & California Railroad

1301 California Avenue

P.O. Box 3340

Parker, AZ 85344 USA

phone: 928 669-6662

web site – www.railamerica.com/railmaps/ARZC.htm

Arizona Central Railroad

300 North Broadway

Clarkdale, Arizona 86324

Phone: 928 639-0010

web site – www.thewesterngroup.net/rrArizonaCentral.html

Arizona Eastern Railway

Operating Office
 P. O. Box 2200
 Claypool, AZ 85532
 phone: 928 473-2447
 web site – www.arizonaeasternrailway.com

Arizona Eastern Railway

Permian Basin Railways Business Office
 118 South Clinton St., Suite 300
 Chicago, IL 60661
 phone: 312 466-0900
 web site – www.permianbasinrailways.com

Black Mesa & Lake Powell Railroad

SRP - Navajo Generating Station
 Mail Station NGS010 - PO Box 850
 Page, AZ. 86040-0850
 phone: 928 645-6210
 web site – www.srpnet.com/about/stations/navajo.aspx

Copper Basin Railway

PO Drawer I
 Hayden, AZ. 85235
 phone: 520 356-7730
 web site – www.asarco.com

Magma Arizona Railroad

BHP-Billiton
 PO Box M
 San Manuel, AZ. 85631
 phone: 520 385-3456
 web site – www.bhpbilliton.com/bb/home.jsp

San Pedro & Southwestern Railroad

796 East Country Club Drive
 PO Box 1420
 Benson, AZ. 85602
 phone: 520 586-2266

San Manuel Arizona Railroad

BHP-Billiton
 PO Box M
 San Manuel, AZ. 85631
 phone: 520 385-3456
 web site – www.bhpbilliton.com/bb/home.jsp

Tucson, Cornelia & Gila Bend Railroad

Freeport-McMoRan
 One North Central Avenue
 Phoenix, AZ. 85004
 phone: 602 366-8100
 web site – www.fcx.com

Tucson, Cornelia & Gila Bend RR

Phelps Dodge Ajo, Inc.
 South Highway 85
 Ajo, AZ. 85321
 phone: 520 387-3219

Terminal / Industrial / Switching Railroads

APS Cholla Power Plant

Arizona Public Service - Coal Handling
PO Box 188, Mail Station 4467
Joseph City, AZ. 86032
phone: 520 288-1337
web site – www.aps.com/general_info/AboutAPS_18.html

ASARCO Hayden Smelter

ASARCO Hayden
PO Box 8
Hayden, AZ. 85235
phone: 520 356-7811
web site – www.asarco.com

Camp Navajo

PO Box 16123
Bellemont, AZ. 86015
phone: 928 773-3200
web site – www.camp-navajo.org/industrial.php

McElhaney Cattle Company

34673 East County 9th Street, Suite A
Wellton, AZ. 85356
phone: 928 785-3384

Phelps Dodge Morenci Industrial

4521 Highway 191
Morenci, AZ 85540
phone: 928 865-6481
web site – www.fcx.com

Phoenix Corporate Headquarters
PD / Freeport-McMoRan
One North Central Avenue
Phoenix, AZ. 85004
phone: 602 366-8100

Phelps Dodge Sierrita Mine

6200 West Duval Mine Rd / PO Box 527
Green Valley, AZ 85622-0527
phone: 520 648-8500
web site – www.fcx.com

Phoenix Corporate Headquarters
PD / Freeport-McMoRan
One North Central Avenue
Phoenix, AZ. 85004
phone: 602 366-8100

Port of Tucson

6964 East Century Park Drive
Tucson, AZ. 85706
phone: 520 574-1320
web site – www.portoftucson.net

Passenger / Tourist Railroads / Rail Tours

Amtrak

Government Affairs
60 Massachusetts Ave, NE
Fourth Floor
Washington, DC. 20002
Phone: 202 906-3918
Passenger Information Phone: 800-USA-RAIL (800 872-7245)
web site – www.amtrak.com

Grand Canyon Railway

Passenger Depot
233 North Grand Canyon Boulevard
Williams, AZ 86046
Phone: 800-THE-TRAIN (800 843-8724)
web site – www.thetrain.com

Grand Canyon Railway

Corporate Headquarters
1201 West Route 66, Suite 200
Flagstaff, AZ 86001
Phone: 928 773-1976

Verde Canyon Railroad

300 North Broadway
Clarkdale, Arizona 86324
Phone: 800 320-0718
web site – www.verdecanyonrr.com

Yuma Valley Railway

Yuma Valley Chapter - National Railway Historical Society
PO Box 10305
Yuma AZ 85366-8305

- Yuma Valley Railway no longer has an active phone or website.
- US Bureau of Reclamation owns the Yuma Valley Railway track and real estate.
- US Bureau of Reclamation Lower Colorado Region: Phone: 702 293-8705

GrandLuxe Rail Journeys

Attn: Customer Service
35715 US Hwy 40, Suite D302
Evergreen, CO 80439
phone: 800 320-4206
web site – www.americanorientexpress.com/Index.html

Sierra Madre Express

P.O. Box 26381
Tucson, AZ 85726-6381
phone: 800 666-0346
web site – www.sierramadreexpress.com

Rail Transit Contacts

Amtrak

Government Affairs
60 Massachusetts Ave, NE
Fourth Floor
Washington, DC. 20002
Phone: 202 906-3918
Passenger Information Phone: 800-USA-RAIL (800 872-7245)
web site – www.amtrak.com

METRO light rail (metropolitan Phoenix)

101 North First Avenue, Suite 1300
Phoenix, AZ 85003
phone - 602 254-RAIL
email - rail@valleymetro.org.
web site - www.valleymetro.org/METRO_light_rail

Regional Transportation Authority (RTA - metropolitan Tucson)

177 N. Church Ave., Suite 405
Tucson, AZ 85701
phone: 520 770-9410
web site - www.rtamobility.com/ (Tucson Modern Streetcar)

Old Pueblo Trolley (Tucson)

P.O. Box 1373
Tucson, AZ 85702
phone: 520 792-1802
web site - www.oldpueblotrolley.org/index.htm

Rail Preservation Contacts



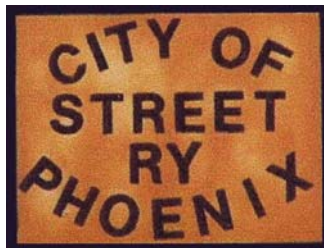
McCormick-Stillman Railroad Park/Scottsdale Railroad & Mechanical Society

7301 East Indian Bend Road

Scottsdale, Arizona 85250

phone: 480 312-2312

web site - www.oldpueblotrolley.org/index.htm



Phoenix Trolley Museum/Arizona Street Railway Museum

1218 N Central Avenue

Phoenix AZ 85004

phone: 602 254-0307

web site – www.phoenixtrolley.com



Arizona Railway Museum

330 E. Ryan Road

Chandler, AZ 85224

phone: 480 821-1108

web site – www.azrymuseum.org

Rail Preservation Contacts (continued)



Old Pueblo Trolley

P.O. Box 1373

Tucson, AZ 85702

phone: 520 792-1802

web site –

www.oldpueblotrolley.org/index.htm

Southern Arizona Transportation Museum

414 N. Toole Ave.

Tucson, AZ 85701

phone: 520 623-2223

web site –

www.tucsonhistoricdepot.org



Arizona State Railroad Museum Foundation

204 West Railroad Ave

Williams, AZ. 86046

phone: 928 284-0976

email – alrichmond@npgcable.com



The Arizona Limited was jointly operated by the Southern Pacific Railroad and Rock Island Railroads. A first class passenger train with service between Phoenix, Tucson and Chicago, IL., it operated for only a limited time during the war years of 1942-1944. This is a replica of the lighted 'drumhead' identification emblem, which appeared on the rear-end of the last passenger car.



Arizona's natural wonder of the world, the Grand Canyon was heavily promoted by the Atchison, Topeka & Santa Fe Railway for many decades. Santa Fe Railway offered daily passenger train service from 1901 until 1968. The Grand Canyon Railway re-inaugurated service to the South Rim in 1989.



WASHINGTON, DC

**1717 K Street, N.W.
Washington, DC 20036-5331
T 202.296.6700
F 202.296.3700
transport@rlbadc.com**

CALIFORNIA

**6 Beach Road, #250
Tiburon, DC 94920-0250
T 415.789.5061
F 415.789.5019
rlbasf@aol.com**